



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

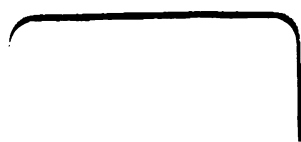
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

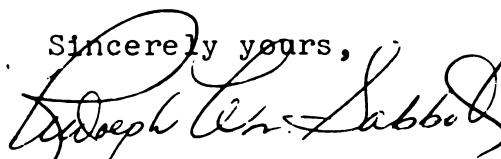


Dear Dr. Steward:

I am pleased to advise you that the book which
you ordered - Butterflies of New England, was
sent to you this date.

Thanking you for your order, I remain-

Sincerely yours,

A handwritten signature in cursive script, reading "Rudolph Wm. Sabbot". The signature is written in dark ink and is positioned above the printed name.

21st Aug. 1970

Rudolph Wm. Sabbot

U

1

PLATE I.



EXPLANATION OF FIGURES ON PLATE I.

19. *Vanessa milberti*, RED-BANDED BUTTERFLY, male, upper side; 19a, lower side of same.

1. *Chionobas semidea*, BROWN MOUNTAIN BUTTERFLY, male, upper side; 1a, lower side of same.

4. *Satyrus alope*, YELLOW-SPOTTED WOOD BUTTERFLY, male, upper side; 4a, lower side of same.

5. *Satyrus nephele*, BROWN WOOD BUTTERFLY, male, upper side; 5a, lower side of same.

6. *Neonympha canthus*, TEN-SPOTTED WOOD BUTTERFLY, male, upper side; 6a, lower side of same.

3. *Debis portlandia*, PEARLY WOOD BUTTERFLY, male, upper side; 3a, lower side of same.

11. *Limenitis arthemis*, WHITE-BANDED BUTTERFLY, male, upper side; 11a, lower side of same.

8. *Danais archippus*, MILK WEED BUTTERFLY, male, upper side; 8a, upper side of same.

10. *Limenitis ursula*, BLUE-BANDED BUTTERFLY, male, upper side; 10a, lower side of same.

THE
BUTTERFLIES OF NEW ENGLAND;
WITH
ORIGINAL DESCRIPTIONS
OF
ONE HUNDRED AND SIX SPECIES,
ACCOMPANIED BY
AN APPENDIX CONTAINING DESCRIPTIONS OF ONE HUNDRED ADDITIONAL SPECIES.
ILLUSTRATED WITH TEN HAND COLORED PLATES,
IN WHICH ARE GIVEN
AT LEAST TWO HAND-COLORED FIGURES OF EACH SPECIES,

BY
C. J. MAYNARD.

[SECOND EDITION.]

C. J. MAYNARD,
NEWTONVILLE, MASS.

1891.

INTRODUCTION

T O T H E S E C O N D E D I T I O N .

In preparing a second edition of the BUTTERFLIES OF NEW ENGLAND, I have not considered it advisable to make any changes in either the text or plates that appeared in the first edition. Therefore the first sixty-six pages and the first ten plates remain as they were originally. The present edition, however, contains an Appendix in which are given descriptions of one hundred and five species and sub-species of Butterflies that occur in North America, east of the Mississippi River. These descriptions are mainly comparative, and the text is accompanied by two hand colored plates, on which are figured some of the species described.

C. J. MAYNARD,

NEWTONVILLE, DEC. 4th., 1890.

INTRODUCTION.

It has been my endeavor in this work, to present recognizable figures, and intelligible descriptions, of the Butterflies which occur in New England. The drawings and descriptions of the perfect insects are original, but I have been obliged to compile descriptions of the larva and pupa from works of various authors who have written upon the subject, and I am indebted to such works for many notes upon habits, distribution, etc.

Particular care has been given to the use of simple terms, in describing the various parts of the insect, as it has ever been my object to simplify the study of science, by using names readily understood, rather than confuse by the use of more complex appellations. For convenience, the veins of the wings are spoken of, as the upper, middle, and lower, but this and the names applied to the various parts of the insect, will be better understood by referring to Fig. 107, Plate VIII, where a full explanation is given.

In measuring Butterflies, it will be seen that several dimensions of different parts are given, not simply the spread of wings, as by other authors, for by this method, I think that the size of a given species can be better understood. The length of the wings is given in a straight line from the base to the longest portion, thus the tails of the secondaries, when present, are included. The width of the wing is taken in the widest part, in a straight line, as seen by reference to Figure 107, Plate VIII. The length of the body also includes that of the head and palpi. The extreme sizes given are generally from insects which I have seen.

Under the head of Observations, I have compared the species in hand, with its nearest allies, giving points of difference, thus making the matter plain to the beginner. I have also, under this head, often spoken of variation in color, some forms of which have been considered sufficient, by many authors, to entitle their possessors to either varietal or specific rank. Much of this is, and ever will be, a matter of individual opinion, but as many phases of coloration have been named, which represented the spring and autumnal brood of a particular species, for example, in the Genus *Grapta*, I see no reason why they should receive a name. In describing the various species of Butterflies, it seems to me, that entomologists have overlooked the results of an important law, that of reversion. What I consider examples of this, may be seen in the peculiar form of *Vanessa antiopa*, known as *lintneri*, and of *Limenitis ursula*, known as *proserpine*, where in the latter, are indications of the white wing bands of *L. arthemis*. It is a well known fact, that in all species of animals having a common ancestral origin, not too remote, individuals are apt to appear which exhibit characters possessed only by that ancestor, and I see no reason why such occurrences should not take place in this class as well as in any other. The less remote the ancestor that was the author of the variable species, the oftener will the peculiarly marked individuals appear.

In the remarks under the heading, Habits, nothing like a life history of the species in hand, has been attempted, but what has been written, is intended to aid the student in a better recognition of the species under consideration.

The Classification given is, with some modification, that used in the arrangement of the New England collection in the cases of the Boston Society of Natural History, and was adopted merely because of its simplicity. In order to avoid confusion, I have intended that the characters given under the opening heading, and under headings of Families and Genera, to apply only to New England Butterflies.

It will be seen that no authority follows the names in the text; this was omitted purposely, but those who are curious to learn who first described any given species, can ascertain by referring to the Index of Scientific Names. As to the specific and generic names used, I have adopted those in current use, and frankly confess, that I have not verified one of them by comparison with the original description, to ascertain whether one name or another has priority, as I have neither time nor patience to study the science of nomenclature, for it appears to me, that we have arrived at a point in zoology, where we must choose between wasting our energy upon what is merely secondary to the object in view, that of deciding knotty problems in reference as to who first described an object, or that of advancing scientific knowledge in the study of the objects themselves.

In preparing the present work, I am greatly indebted to Mr. Samuel Henshaw, of the Boston Society of Natural History, for assistance in ascertaining the number of species which occur with us, and material, also to my friend, Mr. E. B. Clapp, and Mr. F. W. Sprague of Wollaston, for valuable notes, and also for loan of Butterflies, to all of which I have endeavored to give due credit.

This work is written for the student of whatever age or sex, to aid in identification of the beautiful aerial, and almost evanescent forms, which haunt woodlands, fields, and meadows, during the brief summer months of our rigorous climate, and as I lay aside pen and pencil for a season, to enter upon other duties, I tender my best wishes to my many friends and readers.

C. J. MAYNARD.

Boston, Feb., 1886.

BUTTERFLIES

OF

NEW ENGLAND.

RHOPALOCERA. BUTTERFLIES PROPER.

ANTENNÆ, THREAD-LIKE, TERMINATING IN A KNOB. WINGS, AT LEAST THE ANTERIOR, ELEVATED IN REPOSE. WIDTH OF ANTERIOR WINGS, MORE THAN ONE HALF THEIR LENGTH. FLIGHT, DIURNAL.

All of the true Butterflies of our section may be at once distinguished by a combination of the above given characters. A large portion of our Moths (*Heterocera*) possess either feather-like or thread-like antennæ. Some of them however, notably the Sphinges, have these organs enlarged towards the tips, but in these insects the wings are long and narrow, less than one half their length, and never elevated in repose.

FAMILY I. SATYRIDÆ. WOOD-BUTTERFLIES.

Central cell, closed. Upper or first vein of anterior wings, enlarged at base. Wings, moderately robust. Secondaries, not tailed, and somewhat grooved on the portion which comes in contact with the abdomen.

Members of this Family are of rather dull colors. They are inhabitants of woodlands or of barren regions and often occur on mountain-tops.

GENUS I. CHIONOBAS. BARREN-GROUND BUTTERFLIES.

GEN. CH. *Palpi and entire body and legs, very hairy. Antennæ, enlarging gradually at termination. The first vein of primaries, but slightly enlarged at base.*

Members of this group are either inhabitants of the barren Arctic regions or of mountain tops. They are of a dull, inconspicuous color, and the anterior wings but little exceed the posterior in length, while both are quite narrow. The fore legs are very short and densely hairy.

1. CHIONOBAS SEMIDEA.

Mountain Butterfly.

DESCRIPTION.

SP. CH. *Wings, thin and quite narrow. Body, quite large and robust. Antennæ, not long.*

COLOR. *Above.* Both wings, dark yellowish brown with no conspicuous markings. Outer margin narrowly fringed with alternate spots of black and white.

Beneath. With the ground color similar, but marked on the outer, upper margin of primaries with black and white in irregular blotches. The entire surface of the posterior wings is mottled with black and white, the former color

predominating, but the white markings are inclined to congregate toward the outer medial line and form a transverse band, between which and the outer margin, the ground-color shows through more distinctly. Sexes, similar.

Larva. Spindle shaped. Size, .94 by .22, marked in spots of yellowish-green and reddish-brown which are arranged in longitudinal lines. Head, brownish-yellow. Beneath, green; legs, dusky. Pupa measures .56 by .24, cylindrical in form, brown in color. Food plant, a lichen, *Peltigera canina*.

DIMENSIONS.

Extent of wings, 1.66 to 1.95. Size of primaries, .83 by .42 to 1.00 by .50. Length of body, .60. Length of antennae, .35.

OBSERVATIONS.

There is but little variation in this species, and this little is in the proportionate amount of black and white on the secondaries. On some specimens, the white predominates outside the transverse band, but in others the yellowish ground-color is most conspicuous. On some specimens, there is an inclination to form a second transverse band of white along the inner medial line. Distinguished from *C. jutta*, by the absence of any eye spots on the secondaries, and from all other of our Butterflies by the peculiar form, uniform colors above, and by the mixed mottlings on the lower portion of the secondaries. Habitat, White Mountains of New Hampshire.

HABITS.

The Brown Mountain Butterfly appears to be confined to a few high mountain peaks in New England, never visiting the lower regions, excepting as stragglers. They are said to be quite sluggish in flight, keeping near the ground, and usually occur above the timber line, at an elevation of between 5,500 and 6,300 feet. The dull, inconspicuous colors of these offsprings of the cold and mist, form a striking contrast with the rich and often iridescent hues of their tropical brethren, proof positive of the power of the sunlight in producing brilliant dyes.

Mr. S. H. Scudder, in an admirable paper on this species, in the Journal of the Boston Society of Natural History, says that the larva feeds on a species of lichen. This Butterfly appears about July first and continues until the tenth of August.

2. CHIONOBAS JUTTA.

Barren Ground Butterfly.

DESCRIPTION.

Sp. Ch. Form, similar to that of the preceding species, but the size is larger and there are also small eye spots on both surfaces of the secondaries.

Color. *Above* Both wings, dark yellowish-brown with a yellowish band along the border of the outer margin in which are dark spots. On the secondaries, in the band, are other, more or less, distinct yellow spots in the cells, excepting between the first and second median veins, where they are replaced by a black eye spot, indistinctly pupiled with white. The fringe is white, interrupted on the veins with black.

Beneath. Slightly paler than above, spotted along the upper and outer border of the primaries, and at their apex, with black. Secondaries, marbled with narrow, transverse, generally wavy, bands of grayish white, showing a middle band of darker. The eye seen on the upper surface, appears beneath, very prominently white-pupiled, and the other spots are generally larger, more prominent, and paler. Larva, unknown.

DIMENSIONS.

Expanse of wings, 2.06 to 2.20.

OBSERVATIONS.

There appears to be some variation in regard to mottlings, and occasionally there is a second indistinct eye spot on the secondaries. Known from *C. semidea* by the larger size and eye spot on the secondaries. Habitat, Labrador, Quebec, and Northern Maine.

HABITS.

This species appears very rare in New England, being only taken sparingly in the

vicinity of Orino, Maine. Its usual habitat is much further north, in the barren ground of Labrador, but specimens have been obtained in the vicinity of Quebec. Since the above was written, I learn through Prof. S. N. Fernald, that specimens have been taken this season (1885) at Bangor, Maine.

GENUS II. DEBIS. THICKET BUTTERFLIES.

GEN. CH. *The three veins of the primaries are considerably swollen for the basal third. Antennæ, long, slender, gradually enlarging into a rather thick club. Wings, quite robust, with the outer margins scalloped, and the interspaces are well angled. Fore legs, very hairy.*

Members of this genus are conspicuous on account of the robust wings and scalloped margin of the secondaries. They inhabit woodlands, and the colors are inconspicuous.

3. DÉBIS PORTLANDIA.

Pearly Wood Butterfly.

DESCRIPTION.

SP. CH. Size, quite large. Wings, robust, with the veins quite conspicuous, even on the upper side of the secondaries which are deeply scalloped.

COLOR. *Male. Above.* Both wings, rich, deep brown with a pearly or bronzy luster. There are three submarginal black spots on the primaries and five on the secondaries, each surrounded with a yellow ring, but without any pupil. The space in the immediate neighborhood of the spots is lighter and there is a darker median transverse line crossing the primaries. Both wings are margined with three dark lines and fringed with white which is interrupted at the veins with darker.

Beneath. Pale ashy-brown with a pearly luster which has a violet iridescence. There are four sub-marginal spots on the primaries and six on the secondaries the lower of which on the latter wing, is double. All are pupiled, excepting the two central on the primaries, and all are surrounded by a yellow ring, beyond which is one of darker. The space in the vicinity of the spots, is paler and there are two irregular dark bands crossing the wings inside of this light space, while outside of it, are four marginal bands alternately light and dark, and a dark one margins the outer edges. Club of antennæ, black, tipped with red, shaft banded with black and yellowish. Feet and body, ashy.

Female. Similar, but paler above; there are four spots on the primaries and the light space surrounding them is paler, while the spots on the secondaries are much larger. Beneath, the colors are paler, while the markings are much more distinct, and there are indications of pupils in all the eye spots.

Larva. Green, with two white dorsal lines and one on the sides of the same color. Two prominent anal points are also white. Under side and feet, pale green.

DIMENSIONS.

Extent of wings, 2.00 to 2.10. Size of primaries, 1.10 by .68 to 1.20 by .73. Size of secondaries, 1.15 by .75 to 1.20 by .80. Length of body, .85 to .90. Length of antennæ, .50 to .55.

OBSERVATIONS.

This species may be known from *Neonympha canthus* which it resembles quite closely, by the more robust scalloped secondaries, conspicuous spots on the upper wings which are without pupils and there are only five on the secondaries instead of six as in *canthus*. The spots below are larger and surrounded by only one yellow ring, instead of two. From *N. eurytris*, it differs in being much larger and in having more eye spots. Habitat, Northern New England. Rare in the Southern portions, but common in the states west of us.

HABITS.

I have never had the good fortune to meet this fine Butterfly in New England nor elsewhere, but it is said to inhabit the woodlands and to appear in July. The larva feeds upon grasses. Although specimens found in Massachusetts are rare in collections, yet the species doubtless occurs regularly in certain localities.

GENUS III. SATYRUS. WOOD-BUTTERFLIES.

GEN. CH. *First vein of primaries, much enlarged at base and the middle is considerably inflated. Primaries, with very large unpupiled eye spots above and below. Antennæ, with club gradually enlarged and slender.*

All our Butterflies in this genus, are dark colored on both surfaces relieved by the conspicuous eye spots and marblings on the secondaries.

4. SATYRUS ALOPE.

Yellow-spotted Wood Butterfly.

DESCRIPTION.

SP. CH. Wings, robust, distinctly fringed, with the outer margin of secondaries slightly scalloped. Basal portion of wings, densely hairy.

COLOR. Male. Above, on both wings, dark reddish-brown with a wide kidney-shaped spot of yellowish on the primaries, in which are two black eye spots having bluish-white pupils. There are two, dark, narrow, marginal bands on the secondaries and a black dot between the second and third branches of the middle vein, near the outer margin.

Beneath. The colors are rather darker and all the markings seen above, are more clearly defined. The upper portion of the primaries between the band and the base, and the whole of secondaries are marked transversely with fine irregular lines of very dark brown. In addition to the eye spots seen above, there are five other spots on the secondaries, six in all, and each is pupiled with bluish-white and surrounded by a narrow yellow ring. Body, palpi, and legs, quite dark brown. Antennae, ringed with black and white with the club reddish.

Female. Similar, but much paler, the eye spots on the primaries are larger, but those on the secondaries are not as prominent, while some of them are often missing. The lower surface has a bleached appearance and the dark markings are more distinct.

Larva. When mature, measures 1.25 in length, is cylindrical in form, thickest in the middle, tapering gradually toward the ends. Color, pale yellowish-green with dark-green longitudinal stripes. The tail is forked.

Chrysalis. Measures .56 by .06, is rather cylindrical in form, with a notched head, green in color, and is suspended by a button of silk fastened to the extremity of the abdomen.

DIMENSIONS.

Male. Expanse of wings, from 1.95 to 2.26. Size of primaries, 1.05 by .65 to 1.15 by .75. Size of secondaries, 1.00 by .80 by .67. Length of antennae, .45 to .50. Length of body .80 to .83.

Female. Expanse of wings from 2.10 to 2.45. Size of primaries, 1.05 by .75 to 1.20 by .75. Size of secondaries, .95 by .75 to 1.06 by .80.

OBSERVATIONS.

There is considerable variation in this species, the most prominent of which is the size and form of the yellow spots. These are, on the average, kidney-shaped, but are often so constricted in the middle as to form nearly, or quite, two spots, while the color is suffused with dusky. In this stage, some authors consider that it intergrades with *S. nephele*. For further remarks on this subject, see observations under that species. Occasionally, however, this spot broadens out and, especially below, encroaches on the darker portion of the wing. The spot on the secondaries above is occasionally wanting but sometimes is so well developed as to be pupiled. The eye spots on the secondaries beneath, are often missing in the females, and in both sexes vary greatly in size and number. Known from *nephele*, by the clearly reddish-brown color and prominent yellow marks on the primaries. Habitat, the whole of southern New England, replaced in the north by *S. nephele*. There is a smaller, darker form which occurs on Marther's Vineyard and Nantucket, in which the kidney-shaped spot is brick-red. This is the *maritimus* of Edwards.

HABITS.

During the hot midsummer days, the Yellow-spotted Wood Butterflies may be seen making their way with a somewhat jerky, but still leisurely flight, among the ferns and other plants which grow in the coppices. They frequent the edges of woodlands where the ground is damp and the vegetation luxuriant, and seldom leave their chosen retreats for the sunlight, as they are true lovers of the shade, spending their lives in the checkered shadows of the summer woodlands. They appear early, about the last week in June, and become abundant by the first week in July, depositing their eggs about the end of July, which hatch the last of August. The larvæ feed on grasses, go into a lethargic state, clinging to the roots of the plants, where they hibernate; then the following spring, after a time, they enter the pupa state, and appear as Butterflies later in the Summer.

The Yellow-spotted Wood Butterflies continue to fly until the middle of September when they disappear. Although there is but one brood in a season, this species is exceedingly common.

5. SATYRUS NEPHELE.

Brown Wood Butterfly.

DESCRIPTION.

Sr. Ch. Size and form, similar to that of the preceding species, but the kidney-shaped, yellow mark on the primaries is, in a great measure, or quite, obscured with dusky.

Color. Male. Above. Uniform dark brown, with a violet tinge. There are two blue-pupiled, black spots, without rings on the primaries and from one to three on the secondaries.

Beneath. Dark reddish-brown with three dark marginal bands on outer edge of wings, and one central more or less distinct. Remainder of wings, excepting a space between central and outer bands on primaries, finely marked with transverse lines of dark-brown. There are two quite large, blue-pupiled black spots on primaries, each surrounded by a dusky yellow ring, and six of a similar color and of varying size, but all small, on the secondaries. Body, palpi, and eyes, dark-brown. Legs, pale brown. Antennæ ringed with black and ash with the club ash, black tipped.

Female. Smaller and paler and the black eye spots above which are larger than in the male show yellowish rings. Beneath, the colors are quite pale and the yellow rings around the eye spots are of quite a clear yellow. Larva and pupa, similar to those of *S. alope*.

DIMENSIONS.

Male. Spread of wings, from 2.15 to 2.25. Size of primaries, from 1.15 by .60 to 1.20 by .65. Size of secondaries, from 1.00 by .75 to 1.10 by .80. Length of antennæ .35 to .40. Length of body, from .80 to .85.

Female. Spread of wings, from 2.40 to 2.50. Size of secondaries, from 1.10 by .80 to 1.15 by .85. Length of antennæ, from .80 to .55. Length of body, from .85 to .90.

OBSERVATIONS.

This species varies in the absence, or presence, of any reddish markings around the eye spots on the primaries above. In typical examples of the males, this color is wanting, and is confined to quite a narrow ring in the females, but not unfrequently this ring is also to be seen in the males, and occasionally increases in size to quite a wide spot, inasmuch so, in fact, as to represent the reddish band seen in the preceding species, and such specimens are what some entomologists consider direct intergradations between *S. nephele* and *S. alope*; hence, they consider *nephele* a sub-species, or form, of the preceding. In addition to intergradations, Mr. Edwards finds, that at least in one case, eggs of typical *nephele* produced typical *alope*. In spite of this testimony, however, I consider that *nephele* should be entitled to specific rank, as doubtless much of the variation towards *alope*, and even the appearance of an occasional typical *alope*, produced from *nephele* parents, is due partly to extreme variation in a member of a genus where all the species show a tendency to vary greatly, and partly to reversion towards some ancestral type.

Known from *alope*, by the absence of a decided clear yellow spot on the primaries, and from all other of our Butterflies, by the two bluish-pupiled eye spots on the primaries.

HABITS.

In habits, this species resembles those of the Yellow-spotted Butterfly, frequenting the margins of low woodlands. The eggs are laid about the same time as those of the preceding species, the larvæ feed upon grasses, and hibernate.

GENUS IV. NEONYMPHA. QUAKER BUTTERFLIES.

Wing-veins, but slightly enlarged at base and not especially prominent. Wings, fringed with fine hairs, but the secondaries are slightly scalloped. Colors, dull and inconspicuous.

All of the Butterflies contained in this genus are grayish in color, hence the name Quaker which I have applied to them. The secondaries above, and usually the primaries, are provided with prominent pupiled eye spots, each surrounded by one or more rings, and these spots are more numerous and very distinct below. The antennæ are not long, terminating in a slender, elongated club. The tongue is very short.

6. NEONYMPHA CANTHUS.

Ten-spotted Quaker Butterfly.

DESCRIPTION.

Sr. Ch. Size, large. Body, small and covered with a whitish down. Palpi, small and not very hairy. Secondaries, slightly scalloped.

Color. Male. Above. Ashy-brown with violet and bronzy reflections. There is a row of four black, usually pupiled, spots on the primaries, and six similar ones on the secondaries. These are all yellow ringed, excepting the upper on the secondaries. Those on the primaries are followed, towards the base, by a light band, which is encroached upon by an elongated, black, triangular spot. The wings are margined with two black and two white bands, all of which are very narrow.

Beneath. Very slightly paler than above, with a somewhat pearly luster. There are four white-pupiled spots on the primaries and six on the secondaries, the lower of which is double. They are each surrounded, first by a yellow ring, then a darker one, followed by a lighter circle. There are four marginal bands, first a dark, then a yellow, followed by a darker, beyond which is one of whitish, all being narrow. Towards the base, beyond the lines of spots, is a broad light band, and the wings are crossed by two narrow, sinuous, dark bands, between which are two elongated transverse, spots. Body, legs, and palpi, pale ashy. Antennæ, ringed with black and yellow, with the club yellow, black tipped.

Female. Paler, the white bands and black spots are better defined than in the male, especially above, and the secondaries are marked in a similar manner as the primaries.

Larva. Measures 1.02, is long and slender, terminating in two slender, conical tails which are rough with tubercles. Head, furnished with red horns. Color, green striped with darker and yellowish-green. Food plant, grasses.

DIMENSIONS.

Male. Spread of wings from 1.85 to 1.95. Size of primaries, from .90 by .60 to 1.05 by .65. Size of secondaries, from .85 by .45 to .95 by .65. Length of antennæ, from .30 to .35. Length of body, from .67 to .70.

Female. Spread of wings, from 1.90 to 2.16. Size of primaries, from 1.10 by .70 to 1.16 by .75. Size of secondaries, from .95 by .65 to 1.10 by .75. Length of antennæ, from .35 to .40. Length of body, from .70 to .75.

OBSERVATIONS.

The variation in this species is not great. This is mainly in the shade of color, the spottings being quite uniform. Known from *N. eurytris* by the large size and six triple ringed spots on the lower side of the secondaries instead of four and from *Debis portlandia* by the slight scalloping on the secondaries and six, instead of five spots, seen above on the secondaries. Habitat, United States.

HABITS.

I have always found this species in damp, swampy localities which are grown up with bushes; during July they may be seen making their way with a slow, regular motion of their wings through the low, luxuriant herbage, seldom rising to the height of a yard from the ground. The wings are exceedingly delicate, and it is extremely difficult to procure perfect specimens, for what are not already injured by flying through the thick undergrowth, are apt to be broken in capturing, as one has almost always to strike into the foliage to capture them. Although they can scarcely be considered active insects, they are seldom quiet, and whenever they rest for a moment upon a leaf in a patch of sunlight that invades their shady retreats, they are so suspicious and constantly on the alert, as to be difficult to capture with the scissor nets, which is the best instrument with which to take them, in order to prevent them from becoming injured.

The eggs of this species are deposited about the middle of July and the larvæ feed upon grasses. According to Mr. W. H. Edwards, the larvæ moult three times, then hibernate. They moult three times more in the spring, then enter the pupa state, to appear as perfect insects early in July. This species is rather local in distribution, but I have found it quite common about Belmont, Mass.

7. NEONYMPHA EURYTRIS.

Six-spotted Quaker Butterfly.

DESCRIPTION.

Sp. Ch. Size, small. Palpi, large and hairy, but the body is very small. Secondaries, not scalloped. Tongue, very short.

Color. Above. Dark-brown, with a bronzy lustre. There are two large eye spots on the primaries, and three on the secondaries, one of which is large, and two on either side of it, one below it being close and the other is separated by a wide

interval, small, all the spots are ringed with yellow and double-pupiled with silver. There are three dark, narrow, marginal bands on both wings.

Beneath. Yellowish-ashy. The six eye spots seen above, are more prominent, besides which, there are two silver spots on each wing, between the larger dark spots, which have a slight yellow ring surrounding each.

The eye spots are in a lighter field around which is a sinuous band of duskier, and there is a dark band crossing both wings between this and the base, while there are two narrow, marginal bands. Body, black above, ashy below. Palpi, white, fringed below with long, black hairs. Feet, yellowish-ash. Antennæ, ringed with black and white. Club, rufous. Sexes, similar. Larva, not dissimilar to that of *S. alope*, but smaller, and the chrysalis is not unlike that of this species, but much smaller. Food plant, grasses.

DIMENSIONS.

Male. Spread of wings, from 1.30 to 1.35. Size of primaries, from .75 by .50 to .80 by .55. Size of secondaries, from .60 by .50 to .65 by .55. Length of antennæ .30 to .32. Length of body, from .55 to .60.

Female. Spread of wings, from 1.35 to 1.40. Size of secondaries, from .80 by .60 to .85 by .65. Length of antennæ, from .30 to .35. Length of body, from .56 to .63.

OBSERVATIONS.

Occasionally the upper and lower spots are absent on the secondaries above. The size of them, and the width of the of the yellow ring, varies greatly in individuals. Known from *N. cantus*. by the small size and small number of single ringed spots, together with the double silver pupils. Habitat, Eastern United States.

HABITS.

There are perhaps, few of the leisurely moving Butterflies which are so active as the Six-spotted Quaker, as they appear to be constantly in motion, usually flying low among the undergrowth, in the woodlands, for, like nearly all members of this Family, they prefer shadow to bright sunlight. Occasionally, however, one will mount upward among the tree tops, fluttering over the foliage, but it soon descends to sport among its fellows. I do not recollect of ever having seen this species feeding. It is true, they will sometimes alight upon a flower, but it is only to gain a resting place for a moment, just as they would settle on a leaf for a similar purpose; indeed, the tongue is so exceedingly short, about three tenths of an inch in length, that they cannot feed upon all flowers. The Six-spotted Quaker is an unsuspicious Butterfly and may be approached with ease.

They make their appearance about the second week in June and continue until the first week in August.

FAMILY II. DANAIDÆ. RED BUTTERFLIES.

Central cell, closed. Wings, robust, with primaries considerably elongated. Secondaries, not tailed, and considerably grooved on the portion which comes in contact with the abdomen. Veins of wings, not especially enlarged at base.

Members of this Family are of bright colors, of wide-spread distribution, and inhabit the open country.

GENUS I. DANAIS. VEINED BUTTERFLIES.

GEN. CH. Palpi, short, but this and the body are hairy. Club of antennæ, cylindrical. Wings, conspicuously veined with black, while the body is spotted with white.

In all Butterflies of this genus, the secondaries of the males have a small tubercle near the inner, or third, branch of the middle vein. The chrysalis is short and cylindrical, with golden spots.

8. DANAIS ARCHIPPUS.

Milk Weed Butterfly.

DESCRIPTION.

SP. CH. Size, large. Body, short, with the abdomen rather slender, but long. Club of antennæ, enlarging gradually, with a rounded termination. Secondaries, slightly scalloped.

COLOR. *Above.* Both wings, deep yellowish-red, darkest on the primaries, lightest on the inner margin of the secondaries, and narrow margin above. Veins and wide margin, entirely around the primaries, and on the outer edge of the secondaries, deep black. There is a double row of white spots in the black margin on the edges of both wings, six in the upper margin of the primaries, and three in the upper edges of the secondaries. There is a black space near the apex of the primaries, extending from one margin to the other, in which are four light reddish spots. The inner branch of the middle vein of the secondaries has a black tubercle resting against it.

Beneath. With all the markings, excepting the black tubercle which does not appear, clearer, but there is a light field near the apex of the primaries and the secondaries are quite pale and show lighter margins to the black veinings. Antennæ, legs, and body, black, the latter spotted with white, and the abdomen is lined and banded with white. The female differs from the males in the absence of the black tubercle on the secondaries.

Larvæ. Measures 2.00 in length, is whitish in color, transversely and irregularly banded with black and yellow. There are two pairs of dark, fleshy processes; one on the second ring and one on the eleventh. Chrysalis, cylindrical in form, pale green in color, with golden spots in front and a semicircle of gold behind, banded by a line of black dots.

DIMENSIONS.

Male. Spread of wings, from 4.00 to 4.40. Size of primaries, from 1.90 by 1.00 to 2.25 by 1.25. Size of secondaries, from 1.35 by 1.20 to 1.50 by 1.40. Length of antennæ, from .65 to .25. Length of body, from 1.25 to 1.40.

OBSERVATIONS.

The entire amount of variation in this species, even from widely different localities, is in the shade of coloration, or in a little increase or decrease of the dark markings, but these are sufficiently uniform to render the species recognizable at once. Known from *Limenitis disippus* which it somewhat resembles, by the larger size and absence of any transverse band on the secondaries inside the black margin, and from all other of our Butterflies, by the dark color and black margins to the veins. Habitat, Eastern United States and Bahamas.

HABITS.

About the middle of July, the large Milk Weed Butterflies may be seen flying over the meadows, or fluttering about the flowers of the milk weed. They are unsuspicious insects, especially while feeding, when they may be readily captured. These fine Butterflies possess strong powers of flight, and one will often pursue its uninterrupted course over field and shrubbery for miles. Doubtless they thus cross over wide sections of ocean, for I saw hundreds of an allied species, *D. berenice*, flying to the eastward, over the Atlantic, fifty miles from land.

The eggs of this Butterfly are deposited on the milk weed, about the third week in July, and the larvæ are about fourteen days in coming to maturity, moulting three times during this period. The pupa state continues for about ten days, when the perfect Butterfly emerges. The pupa is suspended from the extremity of the abdomen, and its skin is extremely thin and beautifully tinted, but a few hours before the Butterfly transforms, it loses all of the green and gold hues, becoming quite black.

FAMILY III. NYMPHALIDÆ. FIELD BUTTERFLIES.

Central cell, open. Wings, robust, with primaries considerably elongated and narrower than the secondaries, which are deeply grooved on the portion which comes in contact with the abdomen. Veins of wings, not especially enlarged at base.

Members of this Family are of variable colors, but usually bright. The secondaries are either angled, tailed, incised, or scalloped, and the club of the antennæ is variable.

GENUS I. NYMPHALIS. NYMPH-LIKE BUTTERFLIES.

GEN. CH. Palpi, rather short, and not especially hairy. Primaries, not notched. Secondaries, well rounded and slightly scalloped. Club of antennæ, rounded, and enlarging gradually, with the shaft, unicolorous. Colors of the wings below as bright as above.

Butterflies of this genus, are of rather large size, with striking colors, but with no eye spots. The body and inner margins of secondaries, are quite hairy. The legs are long and stout.

PLATE II.



9. LIMENITIS DISIPPUS.

Banded Red Butterfly.

DESCRIPTION.

SP. CH. Size, moderate. Antennæ, cylindrical, somewhat abruptly enlarged. Outer margin of secondaries rounded, no indication of an angle.

COLOR. Above. Both wings, yellowish-red; narrow margin along the veins, margin of both wings, triangular spot near apex of primaries, and curved band on secondaries, black; line of spots on extreme margin of wings, another line in black margin, and five spots in a black triangular spot, white; slight spot in black field in central cell, near second vein, also white.

Beneath. Similar to above, but paler on the secondaries and apex of primaries; the markings are more distinct and the white spottings more decidedly crescent shaped; there is a row of bluish spottings along the upper margin of the curved band on the secondaries. Body, antennæ, legs, and palpi, black, the latter lined and the former spotted with white. The females appear to differ in being slightly larger and in having the white spots on the apex of the primaries bluish.

Larva. Cylindrical, second ring with a horn, third, fifth, sixth, seventh, and tenth, with a white spiney process. the eleventh has two short spines. Color, green, marked with white and rusty. Chrysalis, cylindrical with a protuberance on the back. Color, rufous, abdomen banded with white.

DIMENSIONS.

Male. Spread of wings, from 2.50 to 2.80. Size of primaries, from 1.25 by .75 to 1.40 by .85. Size of secondaries, from .60 by .75 to 1.00 by .80. Length of antennæ .60 to .65. Length of body, from .75 to .85.

Female. Spread of wings, from 2.50 to 3.10. Size of secondaries, from 1.00 by .80 to 1.25 by .85. Size of primaries, from 1.45 by .85 to 1.65 by .90. Length of antennæ, from .60 to .70. Length of body, from .85 to .95.

OBSERVATIONS.

There is but little variation and that is seen in the extent of the black and white markings. Known from *A. archipus*, by the curved black band on the secondaries, and from the other of our Butterflies by the black margins on the veins.

HABITS.

The Banded Red Butterfly may be found flying rapidly over open fields, hovering about flowers or over the trees upon which they deposit their eggs. They appear in Massachusetts the last week in June, deposit their eggs shortly after; the larvæ thus produced, enter the chrysalis state, and emerge as Butterflies in September. This second brood in their turn lay eggs, which produce larvæ that remain in the pupa state all winter to become Butterflies the following spring.

10. LIMENITIS URSULA.

Blue-banded Butterfly.

DESCRIPTION.

SP. CH. Size, large. Antennæ, long, gradually becoming enlarged into a thick club. Secondaries, scalloped and angled.

COLOR. Male. Above. Black, showing bronzy reflections at the apex of the primaries, and the remainder of these and the entire surface of the secondaries, are slightly glossed with bluish. The wings are narrowly margined with white interrupted at the veins with interspaces of black. There is a marginal series of blue crescents on the primaries, followed by one of bluish-white, beyond which is one, more indistinct, of bluish, between which and the white, at the apex of the wing are a few more or less distinct spots of yellowish-red, and in all of these near the upper margin of the wing are two spots of white. On the secondaries, are two marginal bands of blue crescents, under which is a bluish band, interrupted at the veins with black.

Beneath. Pale reddish-brown, becoming lighter at the apex of the primaries, with a decided bluish gloss; on the primaries are two bluish green bands of elongated spots the inner of which is whitish; then a narrow line of black spots beyond which is a wider line of yellowish-red the lowermost of which is replaced by black. The border of the wing near the base is yellowish, and there are two black margined, yellowish-red spots, and two or three of blue, in the central cell. The secondaries are margined with two bands of yellowish-blue, on the under of which is a line of lighter yellowish-red, spots each resting on a black base and all are surrounded by a bluish field, a space in the base of the wing along the upper border is yellowish red and there are three black ringed, yellowish-red spots near the base of the wings.

Body, antennæ, and palpi, black, the latter broadly lined with white and the former obliquely lined with bluish, there are also three longitudinal lines on the lower portion of the abdomen. There are elongated spots of white back of the eye and along the base of the wings. Fore legs are white, remainder, black.

Female. Similar, but larger than the male, there are no red markings on the primaries above but a few reddish dots at the base of the inner spots of bluish on the secondaries, and there are dusky patches under the reddish spots on the lower side of the secondaries.

Larva. Cylindrical, with two rufous horns on the second ring and two tubercles on the fifth. Color, brownish, variegated with white and greenish. Chrysalis, with the under side of the abdomen white, and there is a prominent projection on the back.

DIMENSIONS.

Male. Spread of wings, from 2.75 to 3.10. Size of primaries, from 1.50 by .80 to 1.60 by 1.00. Size of secondaries, from 1.22 by .95 to 1.30 by 1.10. Length of antennæ, from .68 to .75. Length of body, from .83 to 1.05.

Female. Spread of wings, from 3.15 to 3.40. Size of secondaries, from 1.20 by 1.05 to 1.25 by 1.10. Size of primaries, from 1.60 by 1.05 to 1.70 by 1.10. Length of antennæ, from .70 to .75. Length of body, from 1.05 to 1.10.

OBSERVATIONS.

Variation consists in the richness of coloration and slight variability in size of the spottings. Known from *L. arthemis*, by the absence of a decided white band and from our other Butterflies by the absence of tails to the secondaries, and dark, blue banded, upper surface, and red spots beneath. Distributed throughout southern and middle New England.

HABITS.

The Blue-banded Butterfly makes its appearance about the first week in July and may be seen coursing rapidly over the fields, often flying at a considerable height, moving with a strong, well assured flight. They are also fond of secluded nooks, in the margins of woodlands, where they circle about in full enjoyment of the bright sunlight. Like many butterflies, this species is fond of sipping the moisture from damp spots in the soil. This Butterfly is rather solitary in habit and it is rare to find any number associated together.

The larvæ feed upon oak, cherry, willow, and whortleberry. The eggs are laid about the last week in June and there are two broods in a season.

11. LIMENITIS ARTHEMIS.

White-banded Butterfly.

DESCRIPTION.

Sp. Ch. Size, about that of the preceding species or a little smaller and the general form is the same, but the club of the antennæ is a little lighter, however, and the enlargement is not as gradual.

COLOR. Male. Above. Rich dark-brown, showing greenish and bronzy reflections. There is an interrupted white fringe, followed, on the secondaries, by two marginal rows of greenish crescents, one on the primaries, beyond this is a band of yellowish red spots, not clearly defined on the primaries, upon which rests a line of greenish crescents barely indicated on the primaries. There are ten white spots at the apex of the primaries and a broad white band crossing both wings.

Beneath. Reddish-brown. There is a double series of greenish crescents on both wings, in a black band, beyond which is a broad band of yellowish-red, followed, on the secondaries, by a black band; on the primaries by a series of white spots. The white band seen above is clearly defined. In the central cell of the primaries are two black-margined yellowish-red spots, between which is a bluish-green field and there are two or three spots of greenish. The basal portion of the wing is yellowish-red, on the outer margin of the basal portion of the secondaries, are three, black margined, yellowish-red spots and two or three of greenish and the base of the wing, on the upper margin, is yellowish-red. Body, antennæ and palpi, black, the former, spotted with white and the latter, white lined. Fore legs white, others, black. The female differs in being larger and in having fewer yellowish-red spots above.

Larva. Measures 1.10 long, is cylindrical in form, with a spiney horn on the 2d segment, color varying from green to buff. Head, grayish. Chrysalis, .90 in length, sub-cylindrical in form, with a prominent protuberance on the back, color, grayish.

DIMENSIONS.

Male. Spread of wings, from 2.60 to 3.00. Size of primaries, from 1.25 by .70 to 1.45 by .80. Size of secondaries, from 1.00 by .77 to 1.15 by .95. Length of antennæ, from .55 to .68. Length of body, from .70 to 1.00.

Female. Spread of wings, from 2.75 to 3.00. Size of primaries, from 1.60 by .95 to 1.70 by 1.00. Size of secondaries .15 by .95 to 1.20 by 1.00. Length of antennæ, from .58 to .70. Length of body, from .75 to 1.10.

OBSERVATIONS.

There is considerable variation in this species; occasionally, the ground color is reddish-brown even above. Known from all of our Butterflies by the dark colors and wide, conspicuous band crossing both wings. Common in Northern New England, rare in Massachusetts.

HABITS.

This fine Butterfly has many of the habits of the preceding species, occurring on the margins of woodlands or along roads which are bordered by forests. The White-banded Butterfly is rare in the vicinity of Boston, but I have seen typical examples taken here, although the form which has been called *proserpine* is usually captured. As we proceed northward, the typical *arthemis* becomes more common, and when we reach New Hampshire we find them abundant. They are also common along the mountain regions in the western portion of Massachusetts.

The eggs of the White-banded Butterfly are deposited the last of July and they hatch in from seven to nine days, undergo two moults, then construct a case of leaves in which they pass the winter. Early in spring they feed a few days, moulting a third and fourth time, and enter the chrysalis state early in June, appearing as Butterflies the first week in July.

GENUS II. GRAPTA. INSCRIBED BUTTERFLIES.

GEN. CH. *Palpi, rather long, but not especially hairy. Primaries, notched. Secondaries, notched and tailed. Club of antennæ, flattened and enlarging gradually, with the shaft banded; with the colors of the wings below, duller than above, and there is a silvery white C-shaped mark on the middle cell of the secondaries.*

Butterflies of this genus are of medium size, with striking colors above, no eye spots, but there is a C or J-shaped mark on the middle of the secondaries below. The body and inner margin of secondaries are quite hairy.

12. GRAPTA INTERROGATIONIS.

Semicolon Butterfly.

DESCRIPTION.

SP. CH. *Form, robust. Size, large. Body, short and the legs are long. Apex of primaries, elongated and curved downward.*

COLOR. *Above.* Rich, golden red, with a brownish margin on outer edge of both wings, this being widest in the secondaries. In this margin, is a more or less distinct band of yellowish-red spots. There are seven dark-brown spots on the primaries, two of which are in the central cell, one, larger, at its upper margin and one smaller beyond this, one in the upper cell of the central vein, one in the lower, and one in the cell between the middle and lower vein. There are three brown spots on the secondaries, one, the largest, on the upper margin, one in the central cell and one in the upper cell of the middle vein. Both wings are narrowly fringed outwardly with bluish-white.

Beneath. Yellowish-red, becoming dusky on the apex of the primaries. There is a dusky transverse band crossing both the wings centrally, and between this and the base are a few dusky spots. The basal portion of the outer margin of the primaries is dotted with yellowish-white. There is a silver C-shaped spot in the central cell, on the secondaries, beyond which is a small dot. Body, yellowish above, purplish beneath. Eyes, brown. Palpi, reddish above, yellowish-white beneath. Feet, yellowish-white. Antennæ, ringed with black and white. Club, dark brown, tipped with reddish. Sexes, similar.

Larva. Brownish, variegated with pale yellow and whitish, with a yellowish line along the sides. Head and feet, reddish. Chrysalis, angular in form, with the head notched. Color, ashy-brown, marked with silvery spots on the back. Food plants, elm, lime, and hops.

DIMENSIONS.

Spread of wings, from 2.00 to 2.35. Size of primaries, from .95 by .56 to 1.25 by .85. Size of secondaries, from .90 by .56 to 1.10 by .90. Length of antennæ, from .50 to .65. Length of body, from .65 to .95.

OBSERVATIONS.

There is considerable variation in this species, and what I have described as the type, is the lighter form, or what Mr. Edwards calls *fabricii*, and in this form the amount of yellowish or reddish beneath, varies greatly, as also does the shade of color, and this is often obscured by an overwashing of bluish-white. In another form both surfaces are suffused with

dusky, or are much less bright, and the upper surfaces of the secondaries are dark brown, excepting a small portion of the base; this dark form is the *umbrosa* of Edwards. Known from other members of the genus, by the large size, bluish margin to the wings, and interrupted silvery mark on the lower side of the secondaries. Habitat, all of New England, extending southward and westward.

HABITS.

The Semicolon Butterfly hibernates, and like all members of this genus, thus is seen very early in the spring, but at that time specimens have a worn appearance. There is an early brood in June and another later in August or early in September. The larvæ of the early broods feed on the elm, but those hatched later, live upon the hop vine. This Butterfly remains in the chrysalis state about two weeks.

The Semicolon Butterfly has all the characteristic habits of its relatives, flies with a nervous, rapid motion of its wings, and when it alights, has the habit of raising them and moving about in a restless manner. Mr. Edwards states that he has raised both forms of this species, *fabricii* and *umbrosa*, from one brood of larvæ, but Mr. F. H. Sprague, of Wollaston, Mass., who has had a wide experience with our native species, informs me that he has invariably found that the dark form is the early, or summer, brood and the lighter, the later; consequently, very early in spring he has caught *fabricii*, this being the autumnal form which hibernates. The reason for this variation is difficult to explain as neither food nor atmospheric change appear to have anything to do with it, for we find that Mr. Edwards has produced both forms, where the larvæ were found under precisely the same conditions.

13. GRAPTA COMMA.

Comma Butterfly.

DESCRIPTION.

SP. CH. Size, medium. Wings, moderately incised. The apex of primaries is not especially curved, but the secondaries are well tailed.

COLOR. *Above.* Bright golden-red. Primaries, fringed with whitish, margined with dark-brown on the outer edge. There is a triangular patch of very dark-brown near the apex, two round spots of the same color in the central cell, a larger one above them, one in each branch of the middle vein, and one between the middle and lower veins. There is a wide marginal band of dark-brown on the primaries, in which is a band of reddish spots, and there are three dark brown spots between this band and the base. Beneath, whitish, banded with brown and yellowish-brown.

The silvery C on the secondaries is rounded on the inner margin, never angled. Body, greenish above, purplish, below. Palpi, feet, and antennæ, yellowish-white, the latter broadly ringed on the club and more narrowly on the shaft, with brown.

DIMENSIONS.

Spread of wings, from 1.42 to 2.20. Size of primaries, from .70 by .50 to 1.05 by .70. Size of secondaries, from .50 by .45 to .85 by .70. Length of antennæ, from .40 to .52. Length of body, from .55 to .82.

OBSERVATIONS.

This species varies much as in the preceding. Sometimes the upper surface of the secondaries are so suffused with dusky as nearly or quite to obscure all other markings. This marking above is often, although not always, accompanied by a general overwashing of yellowish below, in which the dark markings are so blended as to be difficult to distinguish. Dark specimens have been called *dryas* by Edwards, whereas the type which I have figured is the *Harrisii* of Edwards. For comparison with allied species see observation under head of G. J.-Album.

Larva. Differs but little from those of *G. interrogationis* and the chrysalis has two conical ear-like projections on the top of the head, while the protuberance is short, thick and beak-like. Food plants, elm and hops.

HABITS.

The Comma is one of our most abundant species, frequenting roads and open places in the vicinity of woodlands, where they may be seen resting in the sunlight or darting

swiftly about with a peculiar jerky motion, characteristic of nearly all the species of this genus.

This species hibernates as perfect insects, thus they may be seen in early spring, but the first brood does not appear until June and there is another brood in September.

Mr. Sprague informs me that the first brood, like that of the Semicolon, is dark in color, while the next one is lighter, and my observations with the species confirms this testimony. I think, however, that specimens having the peculiar rusty under surface to the wings, are confined to particular locations, hence, judge that, perhaps, different food plants produce varying colors. For remarks on distribution of this and allied species, see habits of *J-album*.

14. GRAPTA FAUNUS.

Green-banded Comma Butterfly.

DESCRIPTION.

SP. CH. Size, medium. Primaries, deeply scalloped on the outer margin, with the apex produced into a tail on the lower portion. Secondaries, also deeply scalloped and prominently tailed.

COLOR. *Above.* Bright golden-red, with the primaries broadly and distinctly banded with very dark-brown. The triangular patch near the apex is distinct and there is another spot on the lower margin of the wing opposite to it, two spots in the central cell are fused together and those in the upper and lower branches of the middle vein are round and distinct, while there is another spot in the angle of the lower branch which approximates a large spot in the cell between the lower and middle vein. Base of wing, slightly dusky.

Secondaries, with a dark-brown margin of double the width of that on the primaries, in which is a band of six yellowish-red spots. There are four brown spots in the basal field, the two upper and lower of which are often fused together. Both wings are narrowly fringed with an interrupted line of whitish.

Beneath. General color, rich dark-brown, both wings crossed by a band of lighter in which are darker bandings. On the outer margin of the primaries is a band of shining greenish crescents and two bands of irregular spottings of the same color on the secondaries. There is a silver C on the secondaries, shaped as in *G. comma*. There are irregular markings of reddish and of lighter in the dark portion of the wings. Body, greenish, dark purplish, below. Palpi, brown, banded with yellowish in front. Feet, yellowish-white. Antennae, dusky above, tipped with reddish, banded beneath with whitish.

Larva. Measures, 1.25 in length, cylindrical in form. Head, with two branching horns. Color of first six segments, bright red, finely striped transversely with blue, yellow and black; from the seventh to the twelfth segment is white followed by two black segments. The sides are red with two black bands, the lower of which is spotted with blue. Chrysalis, with bifid horns, grayish in color, spotted with raised ornaments of silver. The abdominal segments are spotted with brown. Food plant, wild gooseberry.

DIMENSIONS.

Spread of wings, from 2.05 to 2.20. Size of primaries, from 1.00 by .60 to 1.05 by .65. Size of secondaries, from .80 by .65 to .85 by .70. Length of antennae, from .57 to .62. Length of body, from .80 to .85.

OBSERVATIONS.

This species is very uniform in size and quite so in markings, the usual difference above being in the fusion or separation of approximate spots, usually the markings below are quite distinct, but in some specimens, the entire lower surface is so suffused with dusky as to nearly obscure the lighter tints, but even in this stage of coloration the greenish is prominent. Habitat, Northern New England and along the mountain region of Western Massachusetts.

HABITS.

In habits the Green-banded Comma resembles those of other members of the genus. The species is common in the Adirondacks, White Mountains and westward and is rare south of this point, but I have examined a fine specimen taken by Mr. Edw. B. Clapp in Warwick, Mass. The eggs are deposited some time in spring and the larvæ are well grown by June first. They transform about the middle of June, and the Butterflies appear early in July.

15. GRAPTA GRACILIS.

Brown-banded Comma.

DESCRIPTION.

SP. CH. Wings, quite deeply scalloped, the primaries are, however, not tailed at the apex, but the secondaries are provided with quite a prominent tail.

COLOR. Above. Pale yellowish-red with quite a narrow, but abruptly defined, marginal band of dark-brown on the outer edges of both wings, and a narrow, dusky one on the upper side of both, the one on the outer edge of the primaries widening at the apex, somewhat. Inside of the band, is a series of yellowish lunate spots, succeeded on the secondaries by a dusky band and on the primaries by two dusky, triangular spots on the upper and lower edges of the wing, that on the former, being the larger and darker. There are two separate, distinct, dark-brown spots in the central cell of the primaries, one larger, reaching to the outer edge of the wing, above these, one small one in the upper branch of the middle vein, one, a little larger, in the cell below this and one, larger still, in the cell below this; nearly in a line with the two in the central cell; thus all the spottings on the primaries are in the normal position of other members of the genus. On the secondaries, is a dusky spot midway of the wing, reaching from the upper edge to the first vein, below this, between the upper branches of the upper vein, is a distinct triangular spot, and below this, crossing the lower branch of the upper vein, is a V-shaped mark, the upper portion of which opens toward the last spot described. In the divisions of the middle vein are some dusky markings. The base of both wings are slightly dusky.

Beneath. On both wings, silvery white, with a broad band of clear umber brown covering the middle of the wing inside of which are narrow bands and markings of clear brown and dark umber; outside this band, the wing is only slightly marked with narrow bands, excepting beyond the outer margin, where there are bandings of brown and rufous, and there is an interrupted, zigzag, black band near the outer edge of both wings and an indication of a second band inside of this, composed of black points. The silvery C marking is not enlarged at the extremities as in *comma* and is quite narrow and slightly angled on the inner edge, being, in fact, about intermediate in form between that seen in *comma* and *progne*. Antennæ, dusky above, tipped with reddish, banded below with white and black. Body above, greenish with rufous hairs, purplish below. Feet and palpi, reddish white.

DIMENSIONS.

Spread of wings, from 1.90 to 2.00. Size of primaries, from .95 by .60 to 1.00 by .65. Size of secondaries, from .75 by .65 to .80 by .70. Length of antennæ, from .50 to .54. Length of body, from .67 to .75.

OBSERVATIONS.

This species varies but little in the specimens which I have examined and is always recognizable, corresponding to the rule given under head of *G. J-album*. Habitat, mountains of New England.

HABITS.

In general habit this species agrees quite closely with other members of the genus, but it inhabits mountains, consequently its distribution is somewhat limited and it is quite rare in collections. I know nothing of the reproductive habits of this species.

16. GRAPTA PROGNE.

Gray-winged Comma.

DESCRIPTION.

SP. CH. Size and general form, similar to that of *G. comma*, but the outer borders of the wings are, if anything, more deeply scalloped.

COLOR. Above. Primaries golden-red. There is quite a wide marginal band of brown on the outer edge, followed by a band of pale yellowish lunate spots, inside of which is a band of reddish-brown which is wide on the upper and lower margin, but very narrow and quite indistinct in the middle. There are two quite small spots in the central cell, a larger one outside of them, one each in the cells formed by the branches of the middle vein, and one between the lower branch of the middle vein and the lower, all of these last three spots are small, round and reddish. Both upper and lower edges of the wings, as in nearly all members of this genus, are narrowly marbled with yellowish. Secondaries, above, dusky-reddish, darkest, outwardly and lightest inwardly. There is a band of rather indistinct, reddish spots near the outer margin, and two dusky spots in the reddish basal portion.

Beneath. Both wings marked, with regular bands of dusky and whitish, the former predominating, excepting a broad band on the primaries in which the whitish is most prominent. There are indications of a greenish band of lunate crescents. The silver mark in the central cell of secondaries is very narrow and is angular on the inner margin. Antennæ, dusky above, banded with whitish below; club, tipped with yellowish. Body, greenish above, purplish below. Feet and palpi, grayish.

Larva. Similar to that of *comma*. Chrysalis measures .70 by .24, slender and cylindrical, with the head having two thick conical projections, color, green, brown and pinkish. Food plants, gooseberry and current.

DIMENSIONS.

Spread of wings, from 1.80 to 2.25. Size of primaries, from .90 by .65 to 1.10 by .75. Size of secondaries, from .85 by .70 to .95 by .75. Length of antennæ, from .50 to .60. Length of body, from .65 to .75.

OBSERVATIONS.

This species is quite uniform in color above, the principal variation being in the size of the spots and a slight difference in coloration above, while below, the darker or lighter bandings vary in amount somewhat, but the proportions are always as given, although the white band on the primaries is not always as conspicuous as in the figure. Habitat, whole of New England.

HABITS.

The Gray-winged Comma Butterfly is one of our most numerous species, occurring along woodland roads, alighting in the dust to enjoy the hot sunshine or may be seen sipping moisture from muddy spots. Like all members of the genus, their motions are very rapid while on the wing, but when alighted, however, they usually keep perfectly quiet and if undisturbed the wings are spread widely open, at which time the insect is quite conspicuous, but when slightly alarmed the wings are closed and then, on account of the gray color which harmonizes perfectly with the surroundings, the Butterflies are quite difficult to detect. In the breeding habits this species agrees quite nearly with those of *comma*, there being two broods, one in early summer and one in August, usually about the middle of the month. The caterpillars feed largely upon the elm and remain in the chrysalis state about two weeks.

17. GRAPTA J-ALBUM.

White J Butterfly.

DESCRIPTION.

SP. CH. Size, large. Wings, scalloped and the secondaries are tailed. Legs, long. Club of antennæ, rounded and enlarging gradually.

COLOR. *Above.* Primaries, bright reddish orange, becoming lighter in spots and darker toward the base. There are two narrow, dusky lines on the outer margin, followed by a connected line of black lunates, which widen out into a triangular patch at the apex, inside this triangular patch is a spot of white and following it are two large triangular patches, of somewhat regular form, with the base resting on the upper edge of the wing, and in the central cell is a double-rounded, black spot. In the upper cell of the middle vein is a black spot and often a second in the angle of the branch of the vein, two spots in the cell below this and two more in the next lower cell. Secondaries, similar in color to the primaries, but becoming nearly black at base and lightening into yellow on the outer margin. There are two rusty bands in this margin, divided by a band of yellowish lunate spots, inside of this on the upper margin is an elongated, white spot followed by a larger black one.

Beneath. On both wings, ashy-white, banded on the outer margin with dusky, inside of which is a line of black bordered, bluish lunates, inside of this is a wide space of whitish spotted and transversely marked with brownish, this white space is banded internally by a narrow, zigzag, dark-umber line and the space within this is banded, lined and spotted with brown and umber. Body, dusky above, surrounded with reddish hairs, purplish, below. Feet and palpi, ashy. Antennæ, dusky above, ringed and banded below with whitish and the club is tipped with whitish.

Larva. Measures two inches in length, light green in color, thickly set with spines and bristles, which are black-tipped on the upper portion of the body, the base of these and those on the remainder of the body being reddish. Chrysalis, one inch long, green in color, with six golden spots on the back, spines and projections similar to those of *comma*.

DIMENSIONS.

Spread of wings, from 2.50 to 2.65. Size of primaries, from 1.36 by .85 to 1.45 by .95. Size of secondaries, from 1.25 by .85 to 1.25 by 1.00. Length of antennæ, from .70 to .75. Length of body, from .85 to .95.

OBSERVATIONS.

This species varies considerably in coloration above, some specimens being very much paler than others, and occasionally the secondaries lack in a great measure the dark bandings, the whole outer margin being bright golden yellow. Known

from all other members of this genus, by the large size and preponderance of black above, and from all others of our Butterflies, by the red and black colors above and peculiar narrow, angular, J-shaped mark in the central cell of the secondaries beneath.

The following characters will be sure to distinguish the other members of the genus *Grapta* which occur with us.

G. interrogationis is known by the large size, downward curved apex to the primaries, group of seven spots on the upper surface of primaries, instead of six, there being one in the outer portion of the central cell, whitish edging to the wings, and a broken C-shaped mark on the secondaries beneath.

G. comma is of medium size, has six spots on the primaries above, the two spots in the central cell usually being separate, the black margin of the wing, narrow, measuring at the opening of the central cell of the primaries, about .07. The wings not very deeply indented and the silver mark beneath is seldom broken, is enlarged at either extremity and is always well rounded on the inner margin.

G. faunus is of medium size, has the spots in the central cell usually fused together, all the spots are large and distinct, while there is a seventh spot in the angle of the lower branches of the middle vein, the wings are deeply indented, the black margin to the wings is very wide, measuring at the opening of the central cell of the primaries, about .12, the black margin to the secondaries is twice as wide, while the line of demarkation, between it and the ground color of the wing, is abruptly defined instead of indistinct as in Nos. 12, 13, and 16, and beneath there are prominent, greenish markings.

G. gracilis has the colors above very pale, the spottings small on the primaries, brown, not black, and the marginal band, also brown, as narrow as in *comma*, but all these markings are distinct and well defined. The marginal band on the secondaries is as narrow as on the primaries, not twice as wide as in other species, and is distinctly defined, and there is an extra V-shaped spot. Beneath, the colors are whitish and clear brown, quite different from that seen in any other of our members of the genus, and the silver C is about intermediate between that seen in *comma* and *progne*.

G. progne resembles the dark form of *comma* above, somewhat, but the marginal bands on the primaries are as wide as in *faunus*, but the principal differences are seen below, both wings being decidedly grayish, without any decided markings whatever, excepting a broad whitish-band crossing the primaries, and the silver C is very narrow and strongly angled on the inner margin.

HABITS.

The White J Butterfly which is quite rare in Massachusetts, but more common in New Hampshire and Maine, has all the characteristic habits of the genus. Specimens which I have taken, I have found either in roads or sipping moisture from muddy spots, and always in the vicinity of willows the leaves of which will probably prove to be the food of this species.

The distribution of members of the genus *Grapta* with us in New England, is as follows; the Semicolon, general, but quite local, being abundant in certain localities, while it is rare in others. The Comma is found everywhere and is about as common in one section as in another. The Green-banded Comma is confined to the mountains north and west. The Brown-banded Comma, as yet, has only been found in the mountains of New Hampshire and is rare even there. The Gray-winged is, like the Comma, found everywhere and is common. The White J is rather northern in distribution being considered rare as far south as Massachusetts.

GENUS III. VANESSA. PICTURED BUTTERFLIES.

GEN. CH. Palpi, very long, and hairy. Primaries, scalloped, not notched. Secondaries, tailed, but not deeply notched. Club of antennæ, rounded and enlarging gradually, with the shaft banded with black and white. Color of wings below, duller than above, and there are no silvery white markings on the secondaries.

Butterflies of this genus are of rather large size, with showy colors above, but are plain grayish below. The body and inner margin of the wings are quite hairy, and the legs are stout. Sexes, similar.

18. VANESSA ANTIOPA.

Yellow-bordered Butterfly.

DESCRIPTION.

SP. CH. Size, large. Wings, robust. Apex of primaries, not much elongated. Body and inner margin of secondaries, very hairy.

COLOR. Above. On both wings, rich purplish-brown, banded with pale yellow in which are numerous black dots and there are two spots of the same color on the apex of the wing resting on the upper margin, inside of this yellow band is one of black in which is a line of bluish spots, having a violet lustre.

Beneath. Blackish, bordered with whitish and dusky and the yellowish marginal band and spottings seen above, are present, but paler. Body, palpi, and antennæ, purplish-black, the latter, tipped with yellowish. Feet, ashy.

PLATE III.



EXPLANATION OF FIGURES ON PLATE III.

20. *Pyrameis atalanta*, Red Admiral, male, upper side; 20a, the lower side of same.

21. *Pyrameis huntera*, Hunter's Butterfly, male, upper side; 21a, lower side of same.

23. *Junonia lavinia*, Buckeye Butterfly, male, upper side; 23a, lower side of same.

22. *Pyrameis cardui*, Thistle Butterfly, male, upper side; 22a, lower side of same.

26. *Argynnis cybele*, Yellow-banded Silver-wing, male, upper side; 26a, lower side of same.

25. *Argynnis idalia*, Regal Silver-wing, male, upper side; 25a, lower side of same.

27. *Argynnis aphrodite*, Silver-wing Butterfly, male, upper side; 27a, lower side of same.

2. *Chionobas jutta*, Barren Ground Butterfly, male, upper side; 2a, lower side of same.

The description given on page 2, of this species was compiled, for I did not have a specimen at hand, now, however, through the kindness of Mr. F. A. Eddy and Prof. Carl Braun, I have two males and a female before me.

Above. Yellowish-brown, fringed with whitish, which is interrupted at the veins. There is a submarginal row of reddish-yellow spots on the primaries, the upper and lower of which, and sometimes some of the others, have dark centers. Secondaries also have a submarginal row of reddish-yellow spots, the lower of which has a black pupil.

Beneath. Much paler than above, with the spots on the primaries showing and the upper eye spots have white pupils. Apex and upper margin of primaries, marbled with black and white. The secondaries are marbled with black and white, with a wide central band considerably darker. Antennæ, reddish. Palpi, body, feet, and eyes, black. Female, similar but larger, with the reddish submarginal spots greatly enlarged, and on the primaries fused together. The black centers are larger and have lighter pupils and there is a second dark centered spot on the secondaries next the lowest. Beneath, two prominently pupiled spots appear.

Mr. Eddy says "C. jutta in its flight seems to circle about very often when disturbed, coming back near to the same place, so that if one waits where it started he has a good chance to catch it if there be little wind. They settle, usually, on the open grassy spots in the bog, favoring certain places, seldom fly far and never high."

Prof. Carl Braun states that "This is a rare insect in Bangor, and only found on a certain bog in the whole state. I believe I took, altogether, in three years collecting, three females and sixteen males, and I believe no one else has ever taken so many, because I was bound to have them."

DIMENSIONS.

Spread of wings, from 1.65 to 2.15. Size of primaries, from 1.00 by .60 to 1.25 by .65. Size of secondaries, from .80 by .60 to .90 by .70. Length of antennæ, from .35 to .40. Length of body, from .65 to .70.

northern and middle portions, excepting in certain seasons, but during some years it is quite abundant, even in Massachusetts.

HABITS.

This beautiful Butterfly hibernates like the preceding species and is usually quite rare in Massachusetts, but during the summer of 1883, they were not uncommon about Boston and quite a number were taken in Belmont in July, while feeding upon the flowers of the button bush. The larvæ feed upon the nettle, and the first brood appears in July and the second in August. I have always found Milbert's Butterfly in damp places, usually in the vicinity of swamps, they are very swift when on the wing, but are fond of reposing in the sun on the top of walls or on logs; generally they are quite shy, but when feeding may be readily captured.

GENUS IV. PYRAMEIS. PAINTED BUTTERFLIES.

GEN. CH. *Palpi, not very long. Primaries and secondaries rounded, not scalloped nor notched. Club of antennæ, rounded and enlarging suddenly, and the shaft is usually banded. Color of wings below, lighter than above.*

Butterflies in this genus have the body very short but not especially hairy, and the colors of the wings below are marked with light shades either in bands or in eye spots. Sexes, similar.

20. PYRAMEIS ATALANTA.

Red Admiral.

DESCRIPTION.

SP. CH. Size, medium. Apex of primaries, rather elongated, but not curved downwards. Inner border of secondaries, not especially hairy. Sexes, similar.

COLOR. *Above.* Dark brown, becoming nearly black at the apex of primaries. Band crossing the primaries obliquely and another on the outer border of the secondaries, bright red; in the latter, near the outer angle are two elongated black spots, having bluish centres and there is a line of black dots through the centre of the band between these spots.

Both wings are narrowly fringed with white interrupted at the termination of the veins, and the black field in the apex of the wing, has six white spots, one of which, the inner, is much larger than the others.

Beneath. Brownish, marbled on the secondaries with whitish; the red band, seen on the primaries above, is present, but is of a more purplish shade, and the white spots in the apex are also clearly defined. Below the red band and large white spot is a circle of black and there is a line of red and one of blue in the central cell near the base of the wing. The apex of the primaries is marked with whitish.

Larva. 1.50 long, cylindrical in form, covered with white, branching spines, brown in color, dotted with white. Chrysalis, gray in color with gold tubercles on the back.

DIMENSIONS.

Spread of wings, from 2.30 to 3.60. Size of primaries, from 1.10 by .65 to 1.25 by .75. Size of secondaries, from .75 by .75 to .95 by .80. Length of antennæ, from .60 to .65. Length of body, from .75 to .85.

OBSERVATIONS.

There is some variation in intensity of color in individuals, some being quite pale and in some specimens there is a pinkish band on the outer margin of the secondaries beneath, but the species may be at once recognized, by the dark upper surface crossed by the two red bands as described.

HABITS.

Harris states that this species was introduced from Europe with the common nettle, on which the larva feeds and also on the hop. The eggs are deposited early in May one to each leaf. The larva, when very young, spins a web with which it draws together the edges of the leaf on which it is feeding, thus forming a habitation, but as it feeds on this dwelling, it literally eats itself out of house and home, when it goes on to another leaf and makes a new domicile. After constructing several edifices in a like nature and moulting three or four times, the larva transforms into a chrysalis in which state it remains about ten days, emerging early in July as perfect insects, and a second brood appears in September.

21. PYRAMEIS HUNTERA.

Hunter's Butterfly.

DESCRIPTION.

Sp. Ch. Body, very robust. Wings, well rounded at the apex of primaries, and the inner margin of the secondaries is quite hairy.

Color. Above. Reddish-orange, with the apex of primaries brown, enclosing five spots of white, both wings are margined with brown on the outer edges, interrupted on the primaries by one narrow reddish band, and on the secondaries by two. There are some regular bands of brown crossing the reddish space on both wings, and there are four violet pupiled spots in a submarginal band on the secondaries, two of which, the upper and lower, are much larger than the inner.

Beneath. Yellowish-brown with the large space on the centre of the primaries purplish-red, both wings are narrowly lined and banded with white and brown. There are two prominent violet pupiled eye spots on the secondaries, surrounded by alternate rings of black and white and near the apex of the primaries above, are three eye spots. There are two narrow marginal bands of violet on the secondaries, the outer of which, is quite pale.

Larva. Measures 1.50 long, is cylindrical in form, has seven, branching, black tipped, white spines on each segment, excepting the first, those on the anterior portion of the body, being shorter than others. Color, black and yellow in interrupted lines. Head, black. Feet, reddish. Food plant, the various species of thistles, also sunflower, hollyhook, burdock and other rough leaved plants.

Chrysalis, usually brown, but varying from black, with golden spots, or entirely golden, to white with a whitish or silvery luster.

DIMENSIONS.

Spread of wings, from 1.95 to 3.71. Size of primaries, from 1.25 by .78 to .87 by .53. Size of secondaries, from .95 by .85 to .90 by .60. Length of antennæ, from .53 to .60. Length of body, from .70 to .85.

OBSERVATIONS.

Some specimens have the large inner spot on the apex of the primaries yellowish, and these are usually, but not always, females and some are paler than others, otherwise there is but little variation. Known from *P. cardui* by the two, instead of five prominent eye spots on the lower side of the secondaries and from all others by these and the peculiar net work of white linings combined with the purplish-red color of the primaries.

HABITS.

Hunter's Butterfly appears late in the season, usually not until August and September. The eggs are deposited on the leaves of the thistle or other rough leaved plants, one to each leaf thus the caterpillars live apart, each spinning a web for itself near the edges of the leaf which is drawn over, forming a miniature tent in which the larva lives. Only the upper surface and pulpy portions of the leaf are devoured the lower portions remaining untouched.

This Butterfly is extremely rapid in flight, but when feeding or resting is quite unsuspicious and may be readily captured.

22. PYRAMEIS CARDUI.

Thistle Butterfly.

DESCRIPTION.

Sp. Ch. Size rather large. Body, robust. Wings, rather short and well rounded. Lower margin of secondaries, quite hairy.

Color. Above. Dark-brown, with an irregular band crossing the primaries, a curved spot in the central cell inside this band, and another in the cell between the lower and middle veins, reddish. There are four white spots on the apex, and a line of white spots on the margin, while both wings are narrowly fringed with white. There is an irregularly formed spot in the middle of the secondaries, and a larger space outside this extends to the inner and outer margins, in this is a series of round, marginal, black spots, inside of which is another line, crescent shaped, of the same color and inside of this are four violet pupiled, black eye spots.

Beneath. Brownish, with a purplish red space on the primaries which is crossed by an irregular band of black, outside of which is another irregular space of black. The five white spots appear at the apex and there is another white band crossing the central cell, and extending to the outer margin, and the marginal bands are the same as above. Secondaries, variegated and lined with black and white in a net work pattern. There are four prominent, violet pupiled eye spots, ringed with black and yellow and there is a fifth spot near the upper portion, in a small white field. There is a

marginal fringe of white, followed by a band of tawny yellow, inside of which is one of whitish, in which is a line of violet crescents. Body, black. Eyes, brown. Antennae, black, white tipped. Palpi and feet, whitish.

Larva and Chrysalis, similar to those of the preceding species, and the food plants are similar, excepting that this species is said to also feed upon a species of everlasting.

DIMENSIONS.

Spread of wings, from 2.40 to 2.60. Size of primaries, from 1.30 by .70 to 1.35 by .90. Size of secondaries, from .82 by .70 to 1.00 by .80. Length of antennae, from .60 to .75. Length of body, from .70 to .90.

OBSERVATIONS.

This species, like the preceding, varies but little and in a similar manner. There is a general resemblance between *P. cardui* and *huntera*, but *cardui* has more brown above than red, exactly the reverse being the case with *huntera*, and there is a semi-circular, purplish-red spot in the central cell, inside of an irregularly shaped spot, as in *huntera*. Beneath, *huntera* has a white dot in the outer purplish-red spot in the cell between the middle and lower branch of the median vein, whereas this is absent in *cardui*. In *huntera* there is a black-lined, white band crossing the secondaries, but this, in *cardui*, is represented by a spot in the central cell, and above all, there are four prominent eye spots in *cardui*, instead of two. Known from all other Butterflies by the peculiar purplish above on the primaries, combined with the white net work on the primaries beneath. Distributed throughout New England.

HABITS.

It is a singular fact and one difficult to explain, that Butterflies of some species appear much more abundantly at certain seasons than at others, and this peculiarity appears more strange on account of some particular species appearing in incredible numbers when almost all other species are scarce; thus during the present season, 1885, the Milk Weed Butterfly is remarkably abundant, appearing by thousands in Massachusetts and, according to the daily papers, by millions in some sections of Canada. Last season the same facts were true, but to a less degree, in regard to Hunter's and the Thistle Butterflies, both being very common, whereas this summer, few or none have been taken, while the closely allied Red Admiral has been very abundant.

The Thistle Butterflies appear in early May, in July, and late in August, and it is quite probable that this and the two preceding species, hibernate as perfect insects. The chrysalis state lasts from eleven to fourteen days in both the last named species.

GENUS V. JUNONIA. OCELLATED BUTTERFLIES.

GEN. CH. Primaries, short and rounded. Secondaries, slightly scalloped. Club of antennae, flattened and enlarging suddenly. Neither body nor wings are especially hairy. Colors, brown, relieved by conspicuous eye spots on both surfaces.

The most noticeable feature in Butterflies of this genus, aside from the short, rounded primaries, are the conspicuous eye spots, or ocelli, on both wings above, and on the primaries below. We have but one species with us. Sexes, similar.

23. JUNONIA LAVINIA.

Huck-eye Butterfly.

DESCRIPTION.

SP. CH. Palpi, short and pointed, not hairy, but these and the body are sparsely covered with down. Wings, large, but not robust.

COLOR. Above. Dusty brown, becoming darker on apex of primaries, with a bluish gloss on the middle of the upper margin. There are three, narrow, dark, marginal bands quite indistinct on the primaries, followed by a wider one of yellowish-red. There are four, blue pupiled, black eye spots, two to each wing, the upper on the primaries and lower on the secondaries being smallest, and each is surrounded by a yellow and black ring. In the central cell of the primaries are two short bands of yellowish-black. There is an oblique creamy-white band crossing the primaries and partly, or wholly surrounding the lower eye spot.

Beneath. Much paler than above, and without the marginal bands. The other markings on the primaries are distinct, and the upper eye spot is double. The eye spots on the secondaries are very small and often indistinct.

Larva. Dark brown above, dotted with white reddish beneath, with two white lines along the side, the upper of which has a row of yellowish spots. Chrysalis, resembles that of *P. cardui*, but is dark brown, mottled with whitish. Food plant, snap dragon, plantain, and gerardia.

DIMENSIONS.

Spread of wings, from 1.75 to 2.20. Size of primaries, from 1.00 by .60 to 1.05 by .55. Size of secondaries, from .65 by .70 to .70 by .75. Length of antennæ, from .50 to .55. Length of body, from .75 to .85.

OBSERVATIONS.

There is considerable variation in this species, especially in the size of the eye spots, and in their distinctness below. The lower eye spot on the primaries is always conspicuous, and this and the four above, will at once distinguish this species from all of our Butterflies. Not uncommon in Massachusetts during certain seasons, but rare north of this point, though it occurs even in Maine, and is abundant throughout the south.

HABITS.

The Buckeye is of the most abundant of southern Butterflies, broods constantly appearing in Florida all winter. They fly quite rapidly, but are fond of reposing in the hot sun in sandy spots, and are seldom found, even in Massachusetts, elsewhere than in the driest portions, preferring those which are entirely destitute of vegetation. In the north they appear in August. Prof. Fernald says, that a single specimen was taken near Bangor, Maine, in 1883.

GENUS VI. EUPTOIETA. UPLAND BUTTERFLIES.

GEN. CH. *Primaries, rather short and rounded. Secondaries, slightly scalloped. Club of antennæ, flattened and enlarging suddenly. Neither body nor wings are especially hairy. Colors, reddish, with dark brown markings above, but the lower side of the secondaries are obscured with whitish.*

The most noticeable feature in Butterflies of this genus, is the pale, inconspicuous, silvery markings. Sexes, similar. We have but one species with us.

24. EUPTOIETA CLAUDIA.

Pale Red Butterfly.

DESCRIPTION.

SP. CH. Size, medium. Antennæ, long. Body, small. Legs, small, but the palpi is quite large.

COLOR. *Above.* Pale yellowish-red, both wings have a marginal band of faded dusky brown, in which is a line of yellowish-red lunate spots. Inside of this band is a line of dusky spots which are small, or wanting, in the central cells of both wings. Inside this line are three marginal zigzag lines, the innermost of which is short, being near the base of the wing. The space inside the second band is darker than that outside. There is a spot in the central cell of the primaries of lighter, surrounded by a ring of dusky.

Beneath. The markings seen above are reproduced, excepting that the marginal band is obscured with whitish, the line of reddish lunate spots becomes a line of whitish, and there is a band of whitish crossing the secondaries, inside of which there is a brownish field which is white lined.

Larva. Measures 1.50 long, cylindrical in form, glossy yellowish-brown in color, with six rows of fleshy spines, steel blue in color. Between these spines, in the rows on the back, are tubercular spots of white. The head is furnished with two, clubbed, antennæ-like spines. Pupa, pearly in color, covered with metallic tubercles. Food plants, violets, mandrake, passion-flower, sedum, desmodium, and portulacca.

DIMENSIONS.

Spread of wings, from 2.00 to 2.20. Size of primaries, from 1.05 by .60 to 1.20 by .70. Size of secondaries, from .75 by .65 to .85 by .70. Length of antennæ, from .50 to .60. Length of body, from .70 to .90.

OBSERVATIONS.

There is but little variation in this species, specimens taken in Massachusetts do not differ essentially from the average of those which occur in the south, even as far south as Florida. Known at once from all of our Butterflies by the pale, apparently faded colors and whitish edging to the wings beneath.

HABITS.

This dull colored Butterfly is one of the most inconspicuous species in the south, flying low over the grassy plains, or in the open glades in the piney woods. I found them very abundant near Calahan in northern Florida, the first week in November, and also at Rosewood through this month, but by the first of December, they had all disappeared.

Several were taken in the vicinity of Newburyport in the autumn of 1883, and Prof. Fernald states that some were captured near Portland the previous summer, it is, however, a rare Butterfly as far north as Massachusetts. In flight this species is quite sluggish, somewhat resembling the small species of *Argynnis* in general habit.

GENUS VII. ARGYNNIS. SILVER-SPOTTED BUTTERFLIES.

GEN. CH. *Club of antennæ, rounded or flattened, but enlarging suddenly. Palpi, long, conspicuous and quite hairy. Body and inner margin of secondaries, either downy or hairy. Colors, reddish, conspicuously marked on both surfaces of primaries with black, and almost always on the secondaries below with silver spots, but occasionally, with violet.*

Butterflies of this genus are variable in size and somewhat so in markings, but all of our species are conspicuously marked with black above, and all, with one or two exceptions, are spotted with silver on the lower surface of the secondaries. Sexes, usually slightly dissimilar.

25. ARGYNNIS IDALIA.

Regal Silver-spotted Butterfly.

DESCRIPTION.

SP. CH. Size, large. Wings, robust. Body and basal portion of secondaries, very hairy. Club of antennæ, rounded. The lower vein and lower branch of the middle is enlarged in the centre in the males.

COLOR. *Male. Above.* Primaries, deep yellowish-red. There is a fringe of white on the outer margin, interrupted at the termination of the veins, followed by a band of black, in which is a more or less distinct line of reddish. Inside this band is a line of crescents, followed by a line of round spots, there are oblique lines of irregular spots crossing the wing, inside this, in the lower cell, is an arrow-shaped mark. In the central cell is a mark like an inverted P, followed toward the base by two bars, all of these markings are black, and the upper and lower margin of the wing is also black. Secondaries, black, with a bluish luster, fringed with white, interrupted at the termination of the veins with black. Inside this are two rows of round spots, the first of which is reddish and the other creamy-white. The base of the wing is reddish, covered with hairs of the same color and in the field in the central cell is a black spot.

Beneath. The primaries are purplish-red with the black markings above repeated, excepting that the arrow-shaped mark in the lower cell and some of the round spots in the upper portion of the wing are absent. There is a line of triangular silvery-white spots between the line of black crescent-shaped spots and the black outer margin, and there are five or six elongated spots of the same color at the apex of the wing and along the upper margin.

Secondaries, yellowish-brown, white-margined as above. Two bands of triangular spots which have the bases in opposite direction, cross the wing, inside of which are about twelve irregular spots, all being silvery white and more or less surrounded with black. Palpi, body, and legs, black. Eyes, brown.

Female. Has all the markings of the male, excepting that the row of white triangular spots seen below on the primaries of the male are reproduced above and both rows of spots on the secondaries above are white.

Larva. Measures 1.75 in length and is furnished with six rows of tapering fleshy spines, each of which is provided with black bristles, two rows on the back being larger than those on the side, and are silvery in color, black tipped, the remainder are orange. The color of the larva is silvery black, lined and striped with orange, yellow and red. The head is reddish above and black beneath. Chrysalis, measures 1.00 in length, is dark brown in color. Food plant, violets and pansies.

DIMENSIONS.

Spread of wings, from 3.00 to 3.80. Size of primaries, from 1.50 by .90 to 1.80 by 1.05. Size of secondaries, from 1.10 by .90 to 1.40 by 1.15. Length of antennæ, from .65 to .80. Length of body, from 1.15 to 1.25.

OBSERVATIONS.

Usually in specimens from Massachusetts the markings are quite uniform, but a female specimen taken by Mr. Dwight Blaney, in Cohasset, Mass., August 19, 1883, differs in a remarkable degree. The black margin of the primaries is widened, but on the other hand, the inner dark markings are smaller in size and of a different form. There is not much difference in the colors of the secondaries above, but the inner row of white spots is absent.

Beneath. The band in the central cell, next the inverted P, is absent although present above. The black margin is interrupted by brownish and the white triangular spots are greatly enlarged. On the lower wings the silver spots are not only greatly enlarged, but many of them at the base are fused together forming elongated patches, radiating from the base of the wing. This specimen I have figure on plate IV, fig. 25 a and 25 c. This form approaches quite closely the so called *A. ushtaroth* described by Dr. Fisher in Proceedings A. N. S. Phila. 1858, p 180, but which is of doubtful validity as a species.

A male specimen taken by Mr. H. F. Gilbert in Woolfboro, N. H., in July, is marked in a peculiar manner; the space inside the upper portion of the zigzag band, between it and the inverted P, is almost wholly black and all the spots in the band show an indication to have a black marking inside of them.

HABITS.

This fine Butterfly makes its appearance with us late in June, frequenting the meadows, and like many other species, feeds upon the flowers of the button bush and water milk weed. The Regal Silver-wing moves with a strong, majestic flight and although not usually rapid in movement when flitting from flower to flower, course about the meadows so quickly as to be extremely difficult to capture.

The eggs of this species hatch in about twenty-five days and the larvæ which are about one twelfth of an inch long, hide as soon as they make their appearance under a log, stone or other object which will afford them protection, and pass the winter in a state of lethargy. In the spring, with the appearance of the growing violets, they crawl to them and begin to feed, moult five times, change to a pupa which is suspended at the ends, and remain in this stage about seventeen days.

26. ARGYNNIS CYBELE.

Yellow-banded Silver-wing.

DESCRIPTION.

Sp. Ch. Size, large. Antennæ, with the club flattened and rounded. Body and inner margin of secondaries, somewhat hairy. Lower and middle vein, with the three branches expanded in the middle.

Color. Above. Yellowish-red on both wings with marginal bands interrupted in the middle of the cells by two elongated spots of the ground color. Inside this band is a line of crescent-shaped spots followed by a line of round spots, inside of which, on the primaries, is a zigzag band. In the central cell of the primaries is, first an inverted P, followed by three bars. On the secondaries is a zigzag line of spots, usually interrupted inside the line of dots, and an S-shaped mark in the central cell. All the dark markings described are black and the veinings on the primaries are also black; and the base of both wings is dusky.

Beneath. Primaries, yellowish-red, but much paler than above. All the dark markings seen above are reproduced below, excepting the marginal bands which are represented by brown, and some of the crescent-shaped spots near the upper border of the wing are dark brown, and these enclose silver triangles, while there are a few other silver spots at the apex of the wing in a brownish field. Secondaries, tawny-red or brownish with a line of silver spots, most of which are triangular in shape. Inside of this, is a line of reddish, black-ringed, silver spots and in the field inside of this, are nine or ten black-ringed silver spots of irregular size but usually rounded. The shoulder and inner margin, near the base is margined with silver. The space between the marginal line of spots and the next line, is pale ochre yellow. The spots which margin this paler line are slightly edged with brown, but this color does not encroach upon the band beyond this mere edging. Body and antennæ, dusky, the latter tipped with yellowish. Eyes, brown. Legs, yellowish.

DIMENSIONS.

Spread of wings, from 2.75 to 3.25. Size of primaries, from 1.40 by .75 to 1.65 by .85. Size of secondaries, from .85 by .95 to 1.25 by 1.15. Length of antennæ, from .65 to .75. Length of body, from 1.00 to 1.10.

OBSERVATIONS.

This species is quite uniform in markings, the usual variation being in the enlargement of the dark markings above, and occasionally these are so large as to become in a measure fused together. Known from the closely allied *A. aphrodite*, by the absence of any purplish in the color of the primaries beneath, but more especially by the greater width of the yellowish band on the secondaries beneath, this band being clear throughout, the silver spots bordering it being merely edged with brownish, whereas in *aphrodite*, the brown on the surface of the wings encroaches upon the yellow band inside the silver spots narrowing it considerably. For differences with other allied species of this genus, see observations under those headings. Known from all other of our Butterflies, by the uniform reddish surface above, with the black markings, especially the inverted P in the central cell, combined with the silvery spottings beneath. Occurs commonly throughout New England.

Larva. Cylindrical in form and quite thick, 2.00 long, furnished with six rows of stiff black bristles. Head, blotched. Silky brown or black in color.

Chrysalis. About 1.00 long, rather thick, streaked, and variegated with brown and red. Food plants, violets.

HABITS.

Early in July, the flowers by the brook sides are visited by this fine Butterfly. They move with an easy flight from plant to plant, never pausing long, and when feeding may

be easily captured, but when coursing over the meadows, they fly quite rapidly, usually going in a straight line. The earlier stages of this species are not very well known. The larvæ have been kept in confinement by Mr. Edwards and moulted five times and during the winter went into the chrysalis state.

27. ARGYNNIS APHRODITE.

Silver-winged Butterfly.

DESCRIPTION.

SP. CH. Size, large. Antennæ, with the club flattened and rounded. Body and inner margin of secondaries, somewhat hairy. Lower and middle vein with its three branches expanded in the middle.

COLOR. *Above.* Yellowish-red on both wings, with the marginal bands interrupted in the middle of the cells by two elongated spots of the ground color. Inside this band is a line of crescent-shaped spots, followed by a line of round spots, inside of which, on the primaries, is a zigzag band. In the central cell of the primaries is first an inverted P, followed by three bars. On the secondaries is a zigzag line of spots, usually interrupted inside the line of dots, and an S-shaped mark in the central cell. All the dark markings described are black and the veinings on the primaries are also black; and the base of both wings is dusky.

Below. The margins to both wings seen above are repeated below, but they are browner in color. The primaries are decidedly purplish-red, especially near the lower margin. The black markings seen above are found below, but are not as large, and five or six of the crescents enclose silver-spots, and there are a few silver-spots near the apex of the wing. Secondaries, deep reddish-brown. There is a submarginal band of triangular spots of silver, followed interiorly by one of rounded spots. The outer row is black-edged outwardly, and the inner, toward the base; between these rows is a somewhat restricted band of yellowish which is encroached upon by the ground color of the wing which extends beyond the rows of spots. In the basal half of the wing are from ten to twelve rounded silver spots, more or less surrounded by black, and the shoulder is margined with silver. Body, dusky, surrounded with reddish hairs. Eyes, brown. Palpi, feet, and antennæ, yellowish, the latter with the club brown.

Larva. Similar to that of *cybele*, excepting that they are smaller, measuring only about 1.50 in length. Chrysalis, also similar to that of *cybele*, but more slender. Food plant, violets.

DIMENSIONS.

Spread of wings, from 2.75 to 3.25. Size of primaries, from 1.40 by .75 to 1.65 by .85. Size of secondaries, from .85 by .95 to 1.25 by 1.15. Length of antennæ, from .65 to .75. Length of body, from 1.00 to 1.10.

OBSERVATIONS.

This species varies much as in the preceding one, the dark markings above being somewhat variable in form and size. Differs from the closely allied *cybele*, in having the two upper of the third row of spots, counting from the outside, the second from the inner side, on the upper portion of the secondaries, smaller near the base of the wing, and separated at the vein, whereas in *cybele* these are further from the base of the wing by at least the width of the spots, are larger, and usually joined together over the vein. Above, the primaries are purplish-red, a color never seen in *cybele*, but the most noticeable difference is seen in the narrow, yellowish, submarginal band on the lower side of the secondaries in *aphrodite*. This is encroached upon by the dark reddish, which is usually deeper in shade than in *cybele*, beyond the line of silver spots. Both *cybele* and *aphrodite* are common throughout New England, but are rather more abundant in the southern and middle portions than in the northern.

HABITS.

The Silver-spotted Butterfly is so similar to the Yellow-bordered Silver-spotted, that for many years they were considered identical, and amateurs even now fail to detect any differences between them, in fact it is quite difficult to distinguish the two when on the wing, although their flight is said to be different.

28. ARGYNNIS ATLANTIS.

Mountain Silver-spotted Butterfly.

DESCRIPTION.

SP. CH. Form, similar to that of the two preceding species, but the primaries are a little more pointed. Body and inner margin of secondaries, quite hairy.

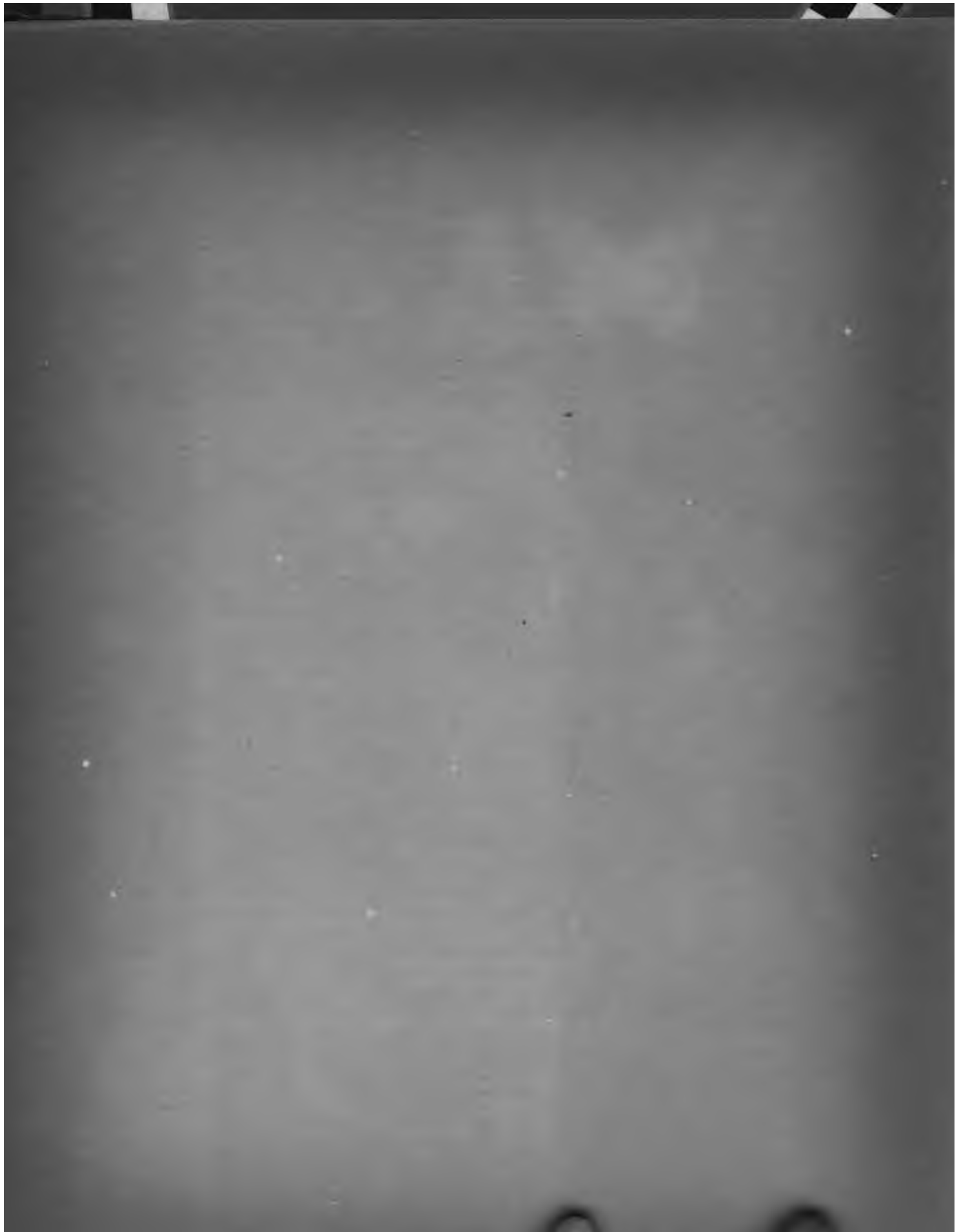


PLATE IV.



EXPLANATION OF FIGURES ON PLATE IV.

24. *Euptoicta claudia*, Pale Red Butterfly, male, upper side; 24a, lower side of same.
28. *Argynnis atlantis*, Mountain Silver-spotted Butterfly, male, upper side; 28a, lower side of same.
31. *Argynnis Bellona*, Meadow Butterfly, male, upper side; 31a, the lower side of same.
32. *Melitæa tharos*, Little Black-bordered Butterfly, female, upper side; 32a, male, lower side of same, light form; 32b, male, lower side of same, dark form.
35. *Melitæa phaeton*, Red-bordered Butterfly, male, upper side; 35a, lower side of same.
55. *Calidryas eubule*, Citron Colored Butterfly, male, upper side; 55a, lower side of same.
30. *Argynnis montinus*, Red Mountain Butterfly, male, upper side; 30a, lower side of same.
34. *Melitæa harrisii*, Harris' Butterfly, female, upper side; 34a, lower side of same.
33. *Melitæa nycteis*, Silver Crescent Butterfly, female, upper side; 33a, above this, lower side of same.
42. *Thecla humuli*, Gray Streaked Butterfly, male, upper side; 42a, lower side of same.
48. *Thecla titus*, Red-spotted Streaked Butterfly, male, upper side; 40a, lower side of same.
62. *Terias nicippe*, Black-banded Orange Butterfly, male, upper side; 62a, lower side of same.
- 25b. *Argynnis idalia*, Regal Silver-wing, female, upper side, resembling the form described as *A. ashtaroth*; 25c, lower side of same.

BUTTERFLIES OF NEW ENGLAND.



COLOR. Above. Quite deep yellowish-red, with the base of the wings dusky and the primaries widely margined with black, both bands being fused into one, excepting at the lower edge of the wing, where they are sometimes slightly separated. Following this is a row of crescents, with their points resting on the band, then a row of round spots, after which is a zigzag band. In the central cell is first an inverted P, then three bands, all these markings being black. Veinings of wings, also black. Secondaries, with a black-margined band, more or less separated with reddish, followed by a row of restricted crescents, then a row of black spots, inside of which is a zigzag band, and in the cell toward the base are two bars, all being black.

Beneath. Primaries, paler than above, and slightly purplish. There is a double margin of brownish, and the other markings seen above are repeated, but smaller and more isolated, and there are a few silver spots at the apex of the wing, inside the row of black crescents, and also two or three silver spots in a brownish field. Secondaries, dark reddish-brown with a submarginal row of rather dull silver spots, inside of which is a row of round spots, the former being edged outwardly, and the latter inwardly, with black, and between these is a band of tawny yellow, considerably encroached upon by a brownish edging to both rows of spots. In the basal field are ten or twelve silver spots, more or less surrounded by black, and the shoulder is silver margined. Body, black, covered with reddish hairs. Palpi, feet, and antennæ, reddish, the club of the last being dark brown. Eyes, dark brown.

Larva and Chrysalis. Similar to that of the preceding species, but smaller. Food plant, violets.

DIMENSIONS.

Spread of wings, from 2.40 to 2.65. Size of primaries, from 1.25 by .60 to 1.30 by .65. Size of secondaries, from 1.00 by .75 to 1.10 by .85. Length of antennæ, from .60 to .65. Length of body, from .80 to .85.

OBSERVATIONS.

There is some variation in this species regarding the greater or less extent of the black markings, the marginal band is usually quite black, but is occasionally separated with reddish. The species may be at once distinguished, by this band never being wholly separated into two as in *aphrodite* and *cybele*; *atlantis* is also darker in color than these by several shades and is somewhat smaller. It may be known from other species, by the silver spottings, combined with the black markings above. This species is confined to the mountainous region of northern New England.

HABITS.

This species does not appear to differ greatly in general habit from the larger species of this genus. The larvæ are hatched in the autumn, hibernate throughout the winter, and feed upon violets in the spring, emerging as butterflies from the middle of June to the first of July. They are common in the section in which they occur.

29. ARGYNNIS MYRINA.

Silver-bordered Butterfly.

DESCRIPTION.

SP. OR. Size, small. Antennæ, with the club enlarging suddenly, flattened and rounded at the termination. Body, and inner edge of secondaries, not hairy. Palpi, very long and hairy. Sexes, similar.

COLOR. Above. Yellowish-red, margin of both wings, interrupted at the center of the cells, enclosing a line of spots of the ground color; there is a line of spots inside this, followed by a zigzag band, with five bars in the central cell of the primaries, the two lower of which enclose a reddish spot, a bar in the base of the lower cell on the primaries, a second zigzag line on the secondaries, followed in the central cell by two dots and veins of both wings, black.

Beneath. On the primaries a little paler than above, with space in the apex and on the outer margin rufous, interrupted at the center of the cells with pale yellowish. There is a submarginal band of silver spots, with a line of black triangles resting upon the inner side. The black markings seen above are repeated on the remainder of the wing, but smaller and more isolated. Secondaries, overwashed in a great measure with rufous. The margin is pale yellowish, followed by a narrow line of dark rufous, then there are two lines of silver spots, and between them is a line of black dots, inside of these are nine or ten silver spots of various forms and sizes, the lowermost of which are margined with black. In the base of the central cell is a small silver-ringed, black spot. Scattered over the wing are several spots of yellowish, where the ground color shows through the rufous. Palpi, yellowish below, rufous above. Feet and body, below, yellowish, the latter dusky above. Eyes, dark brown. Antennæ, yellowish, ringed with black; club, dark brown, tipped with yellowish.

Larva. Measures 1.00 in length, is cylindrical in form, and provided with six rows of fleshy spines, which are beset with black bristles, those on the second segment, at least three times as long as those on the others and projecting forward. Color, ashy-brown, mottled with silvery-black. Legs and feet, black. Head, bronzy. Chrysalis, .60 long, suspended by the tail, light brown, streaked with darker, and provided with two rows of sharp, conical, tubercles on the back. Food plant, violets.

DIMENSIONS.

Spread of wings, from 1.75 to 1.85. Size of primaries, from .85 by .50 to .95 by .55. Size of secondaries, from .55 by .60 to .60 by .65. Length of antennæ, from .40 to .50. Length of body, from .65 to .75.

OBSERVATIONS.

In some specimens the dark markings above show an inclination to become enlarged, and occasionally the lower portion of the zigzag band on the primaries and the spot in the lower cell, become fused together, but the species may be at once recognized by the small size, lengthened palpi, black markings above, combined with the spottings below, especially the border of silver spots. Distributed throughout New England.

HABITS.

From the middle of June until late in September, the pretty, little, Silver-bordered Butterfly may be seen making its way leisurely, among the grass and herbage in the meadows. They are very fond of feeding upon the flowers of the white clover and may be found flitting over this plant whenever it occurs in the low-lands. The larvæ moult three times.

30. ARGYNNIS MONTINUS.

Red-Mountain Butterfly.

DESCRIPTION.

Sp. Ch. Size, very small. Body and base of both wings, quite hairy. Palpi, hairy and quite long.

Color. Above. Yellowish-red, dusky on the base of the wings, with the margin of both wings, black, interrupted in the center of the cells with yellowish; inside this is a triangular line of spots, followed by a line of round spots, then a zigzag band. In the central cell of the primaries are four bands, the second from the base enclosing a spot of reddish. There is a triangular spot in the lower cell of the primaries and some irregular markings on the base of the secondaries, all being black.

Beneath. The colors on the primaries are paler, the apex of the wing is slightly rufous, with two whitish bars, the outer black margin to the wing is very narrow and the other black markings, seen above, are repeated below, but much smaller and more isolated. Secondaries, overwashed with rufous, the black margin is very narrow. There is a line of dull silver spots, on which rest rufous triangles, inside this is a line of rufous spots, followed by a zigzag band of black, inside this are seven dull silver spots of various forms and sizes, all of which are margined, at least on the inside, with black. Body, rufous below, dusky above. Palpi and feet, reddish.

DIMENSIONS.

Spread of wings, from 1.60 to 1.65. Size of primaries, from .78 by .45 to .83 by .50. Size of secondaries, from .60 by .55 to .65 by .60. Length of antennæ, from .60 to .65. Length of body, from .60 to .65.

OBSERVATIONS.

This species varies much as in others of this genus. It is a singular species, combining as it does certain characters of both *A. bellona* and *myrina*, but is known from the former by the presence of silver spottings beneath, and from the latter by the absence of silver spots along the border of the wings, beneath. Occurs only on the White Mountains of New Hampshire, where it appears to be quite rare.

HABITS.

The Red Mountain Butterfly presents one of the instances in which a species is confined to an extremely limited area, being found only on the White Mountains of New Hampshire. This is more singular, inasmuch as all the other species of the genus *Argynnis* which occur with us, have a wide distribution; it is extremely probable, however, that this is a sub-arctic form which has become isolated, for quite a number of similar species occur far north of New England. This Butterfly appears in July and August.

31. ARGYNNIS BELLONA.

Meadow Butterfly.

DESCRIPTION.

Sp. Ch. Size, small. Body and edge of secondaries, not hairy. Club of antennæ, flattened and enlarging suddenly. Palpi, long and hairy. Sexes, similar.

COLOR. Above. Yellowish-red, with the wings dusky near the base. Primaries, margined with black which is interrupted in the center of the cells by the ground color, and encloses a line of spots of the same color. Beyond this are two lines of black spots, followed by a zigzag band, and in the central cell are four black bars, the outer and two inner of which enclose a reddish spot. In the lower cell is a triangular, black mark and a horizontal line. Secondaries, with a narrow submarginal band, followed by a line of small, triangular spots, the points of which rest on this line inside of this are two lines of reddish spots, and the base of the wing is occupied by a zigzag band of confluent lines of spots, all these markings being black.

Beneath. Paler than above, with a submarginal field of purplish-rufous at the apex, in which are two or three spots of violet. There is a submarginal band of rufous triangles, enclosing pale violet spots, replacing the second marginal bands of black seen above, but the other black markings are repeated, but smaller and more isolated. The secondaries are overwashed with purplish-rufous, through which the ground color is seen in spots, and the outer half of the wing is strongly tinged with bluish-violet, while there is a spot of this color on the upper margin. There is a submarginal band of rufous, followed by three bands of spots, the two inner of which are the most distinct and have violet centers, inside this is another irregular band of rufous, and in the central cell is a ring of rufous. Body, palpi, and feet, reddish. Eyes, brown. Antennæ, ringed with black and reddish, with the club, reddish, beneath and black above.

Larva. Similar to that of *myrina*, but the spines on the second segment are not lengthened. Pupa, also similar to that of *myrina*, and the food plants are also violets.

DIMENSIONS.

Spread of wings, from 1.55 to 1.80. Size of primaries, from .80 by .45 to .90 by .50. Size of secondaries, from .60 by .50 to .65 by .55. Length of antennæ, from .35 to .45. Length of body, .65 to .70.

OBSERVATIONS.

The black markings of this species above are inclined to become enlarged, and in one specimen which I have, taken in Massachusetts, the zigzag band has become fused with the outward of the inner markings, forming a wide band. Known from *myrina*, by the absence of any silver markings below, and from all others by the small size, black markings above, combined with the rufous-violet below. Common throughout New England.

HABITS.

This species is one of the most common in the meadows, occurring about the same time as the preceding and associating with them. They resemble them in general habit and the larvæ undergo similar changes.

GENUS VII. MELITÆA. CHECKERED BUTTERFLY.

GEN. CH. Primaries, usually short and well rounded at the tips. Body and inner margin of wings, not hairy. Palpi, not especially long. Antennæ, with club enlarging suddenly and greatly flattened.

Members of this genus do not differ strikingly from those in the preceding genus, excepting there being prominent black markings above, but the lower surface never shows the silvery spots seen in *Argynnis*, though some are prominently checkered with pearly.

32. MELITÆA THAROS.

Little Black-bordered Butterfly.

DESCRIPTION.

Sp. CH. Size, quite small. Body and inner margin of wings, not hairy. Palpi, not especially lengthened and not hairy. Club of antennæ, flattened and enlarging suddenly.

COLOR. Above. Yellowish-red of rather a pale shade; margin of wings, whitish, interrupted at the veins; border of both wings, blackish. On the primaries this is encroached upon by a triangular spot of the ground color in the center, inside this is a narrow band of black. The secondaries are of a paler yellow, with a brownish spot or band on the outer margin, in which is a more or less distinct, pearly crescent, and this is followed by a band of brownish dots, inside of which is a net work of orange lines. Body and palpi, above, dusky, whitish below, feet, whitish, eyes, dark brown. Antennæ, ringed with whitish and dusky, club, brownish.

Females. Are similar, but usually have more brown on the secondaries below, there being a central spot of this color, and the net work is more distinct.

Larva. Measures .85 in length, cylindrical in form, with a heart-shaped, bronze colored head, with two oblique, white stripes on each side of it, and a spot of the same color above the mouth. Body, dark brown, dotted with yellow, provided with several rows of tapering, fleshy spines, furnished with blackish bristles.

Pupa. Measures .50 in length, with the anterior extremity square. The color is brown, dotted with white below and with reddish-brown and black above. Food plant, the various species of *astera*.

DIMENSIONS.

Spread of wings, from 1.30 to 1.40. Size of primaries, from .60 by .30 to .70 by .45. Size of secondaries, from .40 by .35 to .60 by .50. Length of antennæ, from .30 to .35. Length of body, from .45 to .50.

OBSERVATIONS.

There is considerable variation in individuals of this species; some have the markings above much heavier and consequently more confluent, while below, the brown markings are much darker and the silver crescent has a lilac tint, while the basal portions of the secondaries have a silvery cast. This is the form known as *marcia* and is the earliest brood which appears, and is followed by the typical form described above which is known as *morpheus*, and which continues through the remainder of the season.

Common throughout New England. Known by the small size, black border above, brown markings below and silver crescent in the margin of the secondaries beneath.

HABITS.

The first brood of this exceedingly common, little Butterfly, occurs in early June and a second brood appears in July, continuing until quite late in autumn. The larvæ of the first brood moult four times, and then go into the pupa state, emerging in July as Butterflies which are the form known as *morpheus*. These lay eggs which produce larvæ that moult three times, then become lethargic in which state they hibernate, feed again in the spring, moult twice more, emerging in June as the butterfly known as *myrina*. This species flies low and is rather sluggish in movement.

33. MELITÆA NYCTEIS.

Silver Crescent Butterfly.

DESCRIPTION.

Sp. Ch. Size, medium. Palpi, quite long. Primaries, not long, and well rounded. Inner portion of secondaries, slightly hairy.

COLOR. *Above.* Yellowish-red, dusky at base of wings. Both wings are black margined and fringed with whitish interrupted at the veins. Inside this band is a line of black dots, more or less confluent with the margin on primaries, and some on the secondaries have reddish centers, following these dots is a narrow band, and inside of this is another band, and within this is a broader one of irregular width, and in the basal field are several irregular bands.

Beneath. Primaries, pale reddish-yellow, with an interrupted whitish fringe, followed by a narrow brown band, then another one of brown, inside which is a whitish line, indistinct in some places. Crossing the entire wing is a submarginal brown band, on the outer edges of which, near the middle, is a silver crescent, and near the edge a line of white spots. In the middle of the upper border is a large spot of brownish, divided nearly in two parts from below, inside of this, in the central cell, is a C-shaped mark, and in the central cell with the silver crescent, but below the brown field, is a brown spot.

Secondaries with marginal bands as in the primaries, but the brown band encloses four or five silver crescents and a line of white-pupiled, reddish-ringed, black spots crossing the middle of the wing is a broad band of checkers, inside of which is a brown field spotted with yellowish and at the base of the wing are several silver spots. Body, blackish above, whitish, below, palpi and feet, whitish, eyes, brown, antennæ, ringed with black and white.

Larva. Measures 1.00 in length, is cylindrical in form, with a silvery-black, heart-shaped head which is clothed with numerous black hairs. Body furnished with seven rows of black spines, beset with short black hairs, one of these rows being along the back and one on each side, and each spine is situated on a tubercle, all of which, excepting those in the lowest row, which are greenish, being black. Body, striped with black and below, dotted with white.

Pupa. .60 long, shaped like that of *M. phæton*, variously colored with greenish and brown. The abdomen is furnished with five rows of conical tubercles. Food plants, *Diplopappus umbellatus*, *Aster*, *Helianthus*, and *Actinomeris*.

DIMENSIONS.

Spread of wings, from 1.70 to 1.80. Size of primaries, from .85 by .50 to .90 by .55. Size of secondaries, from .65 by .60 to .70 by .65. Length of antennæ, from .35 to .40. Length of body, .50 to .60.

OBSERVATIONS.

This species varies nearly as in the preceding, from which it is known by the preponderance of red above, this is exceeded by the black, whereas in *Harrisii*, the reverse is the case, but more particularly by the absence of a complete submarginal row of whitish-crescents beneath. This and *Harrisii* are known from all other Butterflies by the black markings above, combined with the checkered under surface. Distributed throughout northern New England, but does not occur in Massachusetts.

HABITS.

The Silver Crescent Butterfly is an inhabitant of northern New England and northward, seldom, if ever, appearing in Massachusetts, but they are common in the section in which they occur. The eggs are deposited from the middle to the latter part of June, and the larvæ moult four times before coming to maturity.

34. MELITÆA HARRISII.

Harris' Butterfly.

DESCRIPTION.

Sp. Ch. Size, medium. Primaries, short and rounded. Palpi, quite long and prominent. Inner portion of secondaries, slightly hairy. Sexes, similar.

Color. Above. Dark brown with a marginal fringe of whitish, interrupted at the veins with the ground color. There is a submarginal band of rather indistinct crescents, inside of which is a line of black spots, some of which have whitish centers, inside of this is a band of reddish, completely divided on the secondaries by a zigzag band of brownish, and by a band of the same color on the primaries. From the lower margin to the central cell are four bars, the two outer being transverse and the two inner horizontal, and below these, inside the cell, is another spot, all reddish. There are also three or four small spots in the basal field of the secondaries.

Beneath. Rather light reddish-yellow, with the marginal fringe as above. There is a submarginal band of white crescents, surrounded by black, and inside of this is a line of white spots, nearly all of which are surrounded with black; at the apex of the primaries is a blackish field, followed by a short band of light yellow, extending through the central cell, inside this is a zigzag band, extending through the central cell, then another narrow band crossing the entire wing, then a light band in the central cell, followed by a narrow black one, inside of which is a square light spot surrounded by black, on the secondaries is a central band of three rows of yellowish-white checkers, each surrounded by black, and in the basal field are six spots of pearly white, each surrounded by black. Body and palpi, dusky above, whitish below. Antennæ, ringed with black and white, club brown. Legs, reddish.

Larva. Quite similar to that of *M. phæton* but are rather smaller, and the chrysalis is also the same. Food plants, *Aster* and *Diplopappus umbellatus*.

DIMENSIONS.

Spread of wings, from 1.95 to 1.82. Size of primaries, from .85 by .45 to .90 by .50. Size of secondaries, from .65 by .55 to .70 by .60. Length of antennæ, from .35 to .40. Length of body, from .55 to .65.

OBSERVATIONS.

Quite variable in the amount of black above. Known from the closely allied *nycteis* by the greater amount of black above, this in *harrisii* exceeds the red, whereas in *nycteis* the reverse is the case. Beneath, *harrisii* may be known by the unbroken submarginal band of silver crescents which cross both wings. Distributed throughout New England, but rare in Massachusetts and southward.

HABITS.

I have had the good fortune to meet with this species only a few times in Massachusetts, in fact I consider it quite rare with us. The specimens which I captured were taken while feeding on the flowers of the white clover, in company with *M. tharos*, about June fifteenth. The species is, however, quite common in Northern New England. In general habit, the larvæ resemble those of the Red-banded Butterfly, excepting that they do not make a web over the leaves of the food plant. They moult two or three times and then hibernate. There is but one brood in a season.

35. MELITÆA PHÆTON.

Red-bordered Butterfly.

DESCRIPTION.

Sp. Ch. Size, quite large. Primaries, quite long and pointed. Palpi, very short. Sexes, similar.

Color. Above. Dusky black, narrowly bordered with whitish, then there is a row of yellowish-red spots on the outer margin of both wings, followed by a row of white crescents, then on the primaries by three rows of round spots, the inner of which is indistinct, and the second one extends between the central cell and the upper margin. On the secondaries is a

double row of white spots and indications of a third. In the central cell of the primaries, are two yellowish-red spots. There are also two spots of yellow on the secondaries. Food plant, fly-honeysuckle, arrowwood, and *Chelone glabra*.

Beneath. Also black, with all the red and white markings seen above repeated but enlarged. There is an additional red spot on the base of the primaries, the edge of the wing is red, and there are some white spots scattered over the basal field on the secondaries, there are four rows of white spots, six red spots, and quite a number of white ones scattered among them. Body, black, spotted with reddish. Feet and palpi, reddish. Antennæ, black, with the club reddish.

Larva. 1.10 long, cylindrical in form, the feet below and last two bristly segments are black, the others red, with numerous black bands and with seven rows of long tapering black spines which arise from blue tubercles.

Pupa. .80 long, suspended by the tail, whitish, with black and red dots.

DIMENSIONS.

Spread of wings, from 1.75 to 2.10. Size of primaries, from .90 by .45 to 10.0 by .50. Size of secondaries, from .65 by .50 to .72 by .55. Length of antennæ, from .45 to .55. Length of body, from .60 to .65.

OBSERVATIONS.

This species is quite uniform in coloration, individuals usually varying only in the size of the spots. Readily known from all of our species, by the black color and prominent red and white markings. Distributed throughout New England, but local.

HABITS.

Early in June, this Butterfly may be seen moving with a sluggish, moth-like flight among the grass and low herbage in certain peaty meadows, where they continue until the middle of July, when they all disappear. They are the most stupid and slowest moving Butterflies that I ever met, with one exception, this being, singularly enough, also a small, dark Butterfly which I found common at Miami in Florida. In Massachusetts, especially in the vicinity of Boston, it is extremely local in distribution, and I know of only two or three meadows in which it occurs. These are those peculiar localities under laid with peat, which are not uncommon throughout New England. One of these places is in Belmont, occupying an area of about two acres, one side of which is bordered by woodland, and I never saw this species outside of this restricted section, although they are quite common or even abundant there, during the short season of their flight. The eggs remain nineteen or twenty days, after being deposited, before hatching, and the young larvæ, immediately upon their appearance, begin to construct a web, with which they draw together the leaves of the food plant, feeding upon these thus enclosed. They moult three times, then become lethargic, and hibernate until the following spring. Upon the revival of the warm season, they moult twice more, and enter the pupa state, in which they remain from fourteen to eighteen days.

FAMILY IV. LIBYTHEIDÆ. BEAKED BUTTERFLIES.

Palpi, very long, in the form of a beak. Wings, angular, rather long, narrow, and quite robust, and the central cell of the secondaries is open, but closed in the primaries.

The most noticeable feature in Butterflies of this family, is the long palpi which gives a beaked appearance to the insect. We have but one genus in the United States.

GENUS I. LIBYTHEA. SPOTTED BEAKED BUTTERFLIES.

GEN. CH. Antennæ, short and stiff, with the club enlarging suddenly. Wings, quite long and somewhat scalloped, other characters similar to those under family heading.

Butterflies of this genus are peculiarly marked with reddish, white and black. We have but two species in the United States, only one of which reaches us.

36. LIBYTHEA BACHMANI.

Red and Black Beaked Butterfly.

DESCRIPTION.

Sp. Ch. Size, rather small, club of antennæ, rounded and enlarging gradually. Apex of wings, elongated and curved downward.

COLOR. Above. Dark brown, with three white spots near the apex of primaries, and two of reddish-yellow near the base, while there is a band-like spot of the same color in the middle of the secondaries.

Beneath. The markings on the primaries are similar to those seen above, but the white spot near the apex is only slightly indicated, and the dark markings are overwashed with bluish-white. The secondaries are wholly brownish overwashed with bluish, with two bands of darker.

The females differ from the males in being larger and in having six legs instead of four.

Larvæ. .85 in length, cylindrical in form, greenish-yellow, with a brownish stripe down the back, and one on each side.

Pupa. Suspended by the tail, pea green in color, with an oblique band of yellowish near the head. Food plant, *Celtis occidentalis*.

DIMENSIONS.

Spread of wings, from 1.75 to 2.00. Size of primaries, from .40 by .80 to 50. by .90. Size of secondaries, from .55 by .70 to .60 by .75. Length of antennæ, from .40 to .45. Length of body, from .75 to .80.

OBSERVATIONS.

Known from all others of our Butterflies by the elongated palpi which measures .95 in length, and red markings as described. Distributed throughout the west and south-west where it is abundant. Rare in New England.

HABITS.

This interesting species is confined to the west and south-west, being exceedingly rare in New England. The eggs of the Beaked Butterfly are deposited from June until September, they hatch in about four or five days, moult three or four times, and go into the chrysalis state in about two weeks. The eggs are laid singly on the leaves at the extremity of the branch, and the larvæ, in feeding, simply strip the sides of the leaf at its extremity, leaving the midrib untouched.

FAMILY V. LYCAENIDÆ. LITTLE BUTTERFLIES.

Central cell, closed. Primaries but little longer than secondaries and these are only slightly grooved on the portion which comes in contact with the abdomen. Upper vein of secondaries, with only two branches. Feet four, none rudimentary.

Members of this family are either bright or dull in color and the outer border of the secondaries is either slightly scalloped, dentatated, or even tailed. They are all small Butterflies, some being quite minute, and the species are numerous.

GENUS I. THECLA. STREAKED BUTTERFLIES.

GEN. CH. *Secondaries, usually provided with one or more tails, which are more or less prominent, or rarely only dentated, but the inner angle of secondaries is always expanded into a rounded protuberance. Colors above, usually dull.*

These small Butterflies, although usually dull above are underlined below by various markings in black, white, or often in blue and red. There are twelve species with us. Sexes, different, the males, usually having an oval spot near the upper border of the primaries which is slightly elevated above the surface.

37. THECLA ONTARIO.

Ontario Streaked Butterfly.

DESCRIPTION.

Sp. Ch. Primaries, considerably pointed. Secondaries, provided with only one tail, quite long, and situated on the lower branch of the middle vein, and there is a rudiment of another on the vein next above this.

COLOR. Males. Above. Dusky brown, fringed with lighter, with the oval spot on the primaries about twice as long as wide and paler in color. Secondaries, with a small, reddish, crescent-shaped spot near the outer border, between the middle and lower branches of the middle vein, and beneath this are two alternate transverse lines of black and white.

Beneath. Pale brown, fringed on the primaries with lighter, followed by a narrow band of dusky, inside of which is another dusky band, then a shorter zigzag white band, lined internally with black.

The secondaries have a whitish fringe, followed by a band of black, then a white one, and inside this, nearer the middle of the wing, are two bands, the outer of which is black externally and white internally, and on the inner the reverse is the case. At the extreme point of the inner angle of the wing is a small black spot, above which is a longitudinal red line, next the dot is a blue spot reaching to the tail, and above it are two lines of bluish, next to this is a black dot, and above it is a white crescent, to which is joined a second. Body, feet, and antennæ, dusky.

Larva. .50 long with the body considerably flattened. Head, greenish-brown. Body, velvety-green, with a darker stripe down the back. The middle segment has two pale yellow oblique lines on the side of the last two segments, each having a yellow patch of bluish-green. Food plant, a species of *Crataegus*.

DIMENSIONS.

Spread of wings, from 1.10 to 1.15. Size of primaries, from .60 by .35 to .65 by .40. Size of secondaries, from .50 by .35 to .60 by .40. Length of antennæ, from .30 to .32. Length of body, from .40 to .45.

OBSERVATIONS.

Known from the closely allied *acadica*, by the one tail and absence of the short band in the middle of the wing. For other variations see Observations under head of *Thecla titus*.

HABITS.

This extremely rare species occurs only as a straggler in New England and it is not common even in Ontario, its ordinary habitat.

38. THECLA STRIGOSA.

White-bordered Streaked Butterfly.

DESCRIPTION.

Sp. Ch. Primaries, not especially pointed. Secondaries, rather narrow and rounded, provided with two tails, the inner of which is twice the length of the outer.

Color. Male. Above. Dark brown, about the shade of the last, fringed with whitish, no markings on the primaries, excepting the oval spot. The anal angle of the secondaries is black, enclosing a reddish spot and there is a black transverse line above the tails which are also black, white edged.

Beneath. Reddish-brown, much paler than above, white fringed, and this is followed on both wings by a dusky line. On the primaries is an indistinct band of dusky, followed by a band of black crescents, white lined interiorly, resting on pale reddish spots, externally, within this, near the apex of the wing, is a short, white and black line reaching through the central cell, then another white and black line reaching to the lower branch of the middle vein, followed by a white and black one, crossing the wing to the lowermost cell, and inside this is an interrupted band, also black and white, thus, counting from the apex of the wing, there are five black and white lines, the outermost of which has the black on the outside, the rest on the inner.

Secondaries also have five black and white lines. The first with the black outside and crossing the wing, the second, short, reaching through the branches of the upper vein. The next two reaching through the branches of the middle vein and the fifth crossing the wing, while there is a sixth, short line, reaching from the inner margin of the wing to the middle vein, the first, fifth, and sixth lines are bent upward on the lower border of the wing, at quite an acute angle. The spaces between the fifth and sixth lines, and some between the third and fourth are reddish, and there is a line of reddish dots outside the outermost line, between the tails is a black dot, below which is a line of brownish, then a blue field and next it in the anal angle is a black spot, on the upper portion of which rests a white dot and above this is a reddish, oblique line. Eyes, dark brown, white marked before and behind. Body, dusky above, whitish below. Feet, whitish. Antennæ, white and black ringed. Club reddish tipped.

Female. Similar, but has two or three spots above on the secondaries, over the tails.

DIMENSIONS.

Spread of wings, from 1.10 to 1.20. Size of primaries, from .50 by .35 to .55 by .40. Size of secondaries, from .55 by .35 to .70 by .65. Length of antennæ, from .35 to .40. Length of body, .50 to .60.

OBSERVATIONS.

Known by the numerous white streakings. For further comparisons see observations under head of *T. titus*. Rare in New England and not apparently common anywhere.

HABITS.

This is an exceedingly rare insect in New England. A specimen kindly loaned me

PLATE V.



EXPLANATION OF FIGURES ON PLATE V.

45. *Thecla nippon*, Black and White Banded Streaked Butterfly, male, upper side; 45a, lower side of same.
52. *Chrysophanus americanus*, Copper Butterfly, male, upper side; 52a, unspotted form of same; 52b, lower side of normal specimen; 52c, dark form with enlarged spots.
43. *Thecla smilacis*, Green Streaked Butterfly, male, upper side; 43a, lower side of same.
44. *Thecla augustus*, Brown Streaked Butterfly, male, upper side; 44a, lower side of same.
53. *Chrysophanus epixanthe*, Brown Copper Butterfly, male, upper side; 53a, lower side of same.
46. *Thecla irus*, Pearly Streaked Butterfly, male, upper side; 46a, lower side of same.
54. *Feniseca tarquinius*, Brown Mottled Butterfly, male, upper side; 54a, lower side of same.
69. *Papilio cresphontes*, Large Black and Yellow Tailed Butterfly, male, upper side; 69a, lower side of same.
51. *Chrysophanus thoe*, Large Copper Butterfly, male, upper side; 51a, lower side of same.
50. *Lycæna comyntas*, Pale Blue Butterfly, male, upper side; 50a, the lower side of same.
63. *Pieris rapæ*, Cabbage Butterfly, male, upper side; 63a, the lower side of the same.
65. *Pieris protodice*, White Butterfly, male, upper side; 65a, the lower side of the same.
60. *Terias lisa*, Little Bordered Yellow Butterfly, male, upper side; 60a, lower side of same.
84. *Ancyloxypha numitor*, Bordered Skipper, male, upper side; 84a, lower side of same.
67. *Papilio philenor*, Orange Banded Tailed Butterfly, male, upper side; 67a, lower side of same.

by Mr Sprague, was taken in Wollaston, Mass. July 19, 1883, and it has been taken in Norway, Maine. I have never seen it living.

39. THECLA EDWARDSII.

Edwards' Streaked Butterfly.

DESCRIPTION.

SP. CH. Size, medium. Primaries, not especially pointed, and the secondaries are provided with two tails, the outer of which is very short, the inner, quite long and twisted.

COLOR. Male. Above. Quite dark brown, with a decidedly bronzy luster. The fringe is whitish, and there are two alternate black and white lines between the tail and the oval angle which has a black dot on it, directly over the tail is a rather indistinct spot of reddish. The oval spot is paler than the surrounding surface and less than twice as long as wide.

Beneath. Paler than above, but smoky brown. Both wings are fringed with lighter, then there is a black band and a white one; inside of this, is a band of black spots, outside of which and resting against them, is a line of quite pale reddish spots which, on the secondaries, are brighter. This band is edged with white internally, inside this is a band of dusky spots, each of which is entirely surrounded with white.

The lowermost spots in both lines on the secondaries are elongated and bent upward. On both wings, near the center, are two short, dusky lines, on the outside of which is a lighter line.

Between the outer and inner tail is a black dot, above which is a distinct crescent of red, and between these and the anal angle is a blue field. The anal spot is black, above which is first a white dot, then a streak of red. Body, dusky above, whitish below. Eyes, brown, with a white line before and behind. Feet, dusky. Antennæ, ringed with black and white. Club, dusky, reddish tipped.

Female. Similar, rather paler, with the red spot on the secondaries larger, and the oval spot on the primaries is wanting.

DIMENSIONS.

Spread of wings, from 1.10 to 1.40. Size of primaries, from .60 by .35 to .65 by .40. Size of secondaries, from .50 by .35 to .60 by .40. Length of antennæ, from .35 to .40. Length of body, from .50 to .60.

OBSERVATIONS.

Known by the red markings outside the first black band. For other comparisons, see Observations under *T. titus*. Not uncommon in New England.

HABITS.

This species does not appear to be uncommon in Massachusetts during July, but on account of its small size and inconspicuous colors is, without doubt, frequently overlooked by collectors.

40. THECLA CALANUS.

Banded Streaked Butterfly.

DESCRIPTION.

SP. CH. Size, about the same as that of the preceding species. The primaries are of similar form and the secondaries have two similar tails.

COLOR. Male. Above. Smoky brown, fringed with lighter, with no markings, excepting the oval spot on the primaries, which is pale-grayish and twice as long as wide. The tails of the secondaries are black, and there is a black transverse line over them.

Beneath. Much paler than above, with a narrow marginal line of black on both wings, inside of which is a white line, inside this is a band of black spots, white lined internally, then a pale dusky band, edged with white. This band breaks up into isolated spots on the secondaries, each of which is surrounded with a white ring, the lowermost of which is bluish. In the center of the wings are two short, dusky lines, white on the outer and inner side. The spot on the inner angle of the secondaries is black, with an oblique, bluish line, at the tip of which is a small spot of red, above this are two oblique lines of black, above the lower one and below the upper is a bluish line. There is a large, blue field between the black spot and the tail, next this is a black dot, on which rests a red crescent, and beside this is another smaller spot and crescent. Body, black above, whitish below. Feet, whitish. Antennæ, white and black ringed. Club, brownish, white tipped. Eyes, brown, white ringed.

Female. Similar, slightly paler, lacks the pale oval spot on the primaries, and there is often an indistinct reddish spot over the tails on the secondaries.

Larva. Measures about .50 long, flattened in form, and closely resembles that of other members of this genus, as does also the pupa. Food plant, oak leaves.

DIMENSIONS.

Spread of wings, from 1.12 to 1.43. Size of primaries, from .60 by .35 to .65 by .40. Size of secondaries, from .50 by .35 to .62 by .40. Length of antennæ, from .30 to .40. Length of body, from .50 to .60.

OBSERVATIONS.

Known from allied species as given in Observations under head of *T. titus*. Not uncommon in Massachusetts and southward, but rare north of this point.

HABITS.

This species does not differ essentially in habit from the majority of the members of this genus and occurs not uncommonly in July, especially in Massachusetts.

41. THECLA ACADICA.

Pale Streaked Butterfly.

DESCRIPTION.

Sp. Ch. Size, large. Primaries, rather square on the outer margin. Secondaries, provided with one tail, the inner, and a rudiment of a second.

Color. Male. Above. Quite pale smoky brown. The oval spot on the primaries is quite narrow, being more than twice as long as wide. The wings are fringed with lighter, inside of which is a narrow line of black. There is a hemispherical spot of orange between the tails, beneath which is a black line, and below this is a second black line, extending to the inner angle of the wing, where there is a black spot.

Beneath. Very pale slate, with bronzy reflections, with a black margin inside the fringe. Inside this on the primaries is a line of black spots each surrounded by a ring of white, and in the middle of the wing is a short line of black white ringed, and having a lighter center. The secondaries have the same lines as the primaries, excepting that the outer line of red spots is much larger, especially toward the inner margin of the wing. The tail is black, and between it and the black spot on the inner angle, is a blue spot, above the black spot is a dot of white, and the red spot above this is large and triangular in form, one angle of which reaches up along the inner border of the wing. The spot in the center of the wing is much longer and narrower than that on the primaries, and lacks the lighter center. Body, dusky above, whitish beneath. Feet, whitish. Palpi, white, black banded. Antennæ, ringed with black and white. Club, reddish tipped. Eyes, dark brown, white before and behind.

Female. Similar above, but is without the oval spot on the primaries. The extreme edge of the upper margin of the primaries is red in both sexes, but this is rather more prominent in the female.

Larva. Not unlike that of allied species.

DIMENSIONS.

Spread of wings, from 1.20 to 1.35. Size of primaries, from .60 by .40 to .67 by .45. Size of secondaries, from .45 by .60 to .50 by .65. Length of antennæ, from .40 to .45. Length of body, from .50 to .55.

OBSERVATIONS.

For comparisons with allied species, see Observations under head of *T. titus*. Occurs in Massachusetts and southward, but is not common.

HABITS.

I have two specimens of this rare species before me which were taken in the vicinity of Boston, but I have never met with it living, in fact it does not appear to be at all common anywhere. Prof. Fernald does not record it from Maine, therefore I judge that Massachusetts is its northern limit.

42. THECLA HUMULI.

Gray Streaked Butterfly.

DESCRIPTION.

Sp. Ch. Primaries, rather rounded at the apex. Secondaries, with two tails, the outer of which is very short and the inner, long and twisted.

COLOR. Male. Above. Rather dark bluish-slate, fringed with lighter, inside of which is a narrow, black border, this is wider on the secondaries, and above it is a bluish band enclosing black spots. The spot in the cell between the tails, is larger and over it, resting on it, is a red crescent, and on the inner angle is a red spot.

Beneath. Pale ashy gray, margined as above, inside of which on the primaries is a dusky line not quite crossing the wing to either margin, inside this, starting from the upper margin and reaching through the branches of the middle vein, is a line of black, white lined externally, and above it is a rather zigzag band of black, interrupted and lined externally with white. In the cell, between the tails, is a black spot, above which is a large patch of red. There is a black spot on the inner angle, above which is a red spot. Tails, black, bluish edged externally. Body, dusky above, whitish, below. Feet, whitish. Eyes, brown, surrounded with white. Antennæ, white and black ringed. Club, red tipped.

Female. Similar, but more smoky above and lacks the bluish band on the secondaries, but the black dots and accompanying red above them are present.

Beneath. The ground color is also more smoky and the markings, although present, are not as distinct.

Larva. Green in color and downy. Food plant, hop.

DIMENSIONS.

Spread of wings, from 1.15 to 1.35. Size of primaries, from .55 by .30 to .65 by .40. Size of secondaries, from .55 by .35 to .63 by .40. Length of antennæ, from .25 to .30. Length of body, from .45 to .50.

OBSERVATIONS.

Known by the gray colors; for further comparisons, see Observations under *T. titus*. Occurs commonly throughout New England.

HABITS.

This beautiful little Butterfly is not uncommon throughout New England, and is one of the first of this genus to appear in spring, specimens being on the wing early in May, in Massachusetts. The larvæ feed upon the hop but probably do little or no injury.

43. THECLA SMILACIS.

Green Streaked Butterfly.

DESCRIPTION.

SP. CH. Size, rather small. Primaries, not pointed. Secondaries, provided with two tails, the outer of which is quite short, but the inner is long and twisted.

COLOR. Male. Above. Bronzy yellow with greenish reflections. Apex of primaries and border of both wings, dusky brown. The oval spot on the primaries is slaty and about twice as long as wide.

Beneath. Green, with purplish-violet reflections. The outer margin of the wing is purplish, followed by a line of white, inside of which is another line of purplish; on the primaries is a second band of white, which crosses the wing in nearly a straight line, until it crosses the middle vein, when it bends inward in a zigzag manner. Inside this and resting against it, is a broader band of purplish, the line of demarkation, which is not well defined on the inner side. On the secondaries, there is a line of four small, black crescents starting from the inner margin. Within this, crossing the wing, is a broader zigzag band of white, inside of which is one of purplish. Near the base of the wing, are two short lines of brown, lined externally with white. Body, dark above, whitish beneath. Feet, whitish. Antennæ, ringed with black and white. Eyes, brown.

Female. Similar, but larger and more brownish above, and lacks the oval spot above. Similar on the primaries below.

Larva. Not unlike that of allied species.

DIMENSIONS.

Spread of wings, from 1.00 to 1.10. Size of primaries, .50 to .35 to .55 by .40. Size of secondaries, from .50 by .35 to .55 by .40. Length of antennæ, from .20 to .25. Length of body, from .40 to .50.

OBSERVATIONS.

Known by the green color; for further comparisons, see Observations under *T. titus*. Occurs in Massachusetts and southward. This is the *Thecla auburniana* of Harris.

HABITS.

The pretty, little, Green, Streaked Butterfly is a rare species. Dr. Harris, who called it the Auburn Butterfly from having captured specimens in what is now Mount Auburn Cemetery, says that it feeds upon the mouseear in May and also on the flowers of the spearment in August. I have never met with it living.

44. THECLA AUGUSTUS.

Brown Streaked Butterfly.

DESCRIPTION.

Sp. Ch. Size, small. Primaries, not pointed. Secondaries, scalloped and provided with two short tails, the innermost of which is the longest and curves inward.

COLOR. Male. Above. Dark brown, with bronzy reflections, fringed with lighter; on the secondaries, over the tails, and between them and the inner margin, are two dark chestnut spots.

Beneath. Dusky, margined with dark brown, interrupted with white. There is a line of dark brown dots, most distinct on the secondaries, while on the secondaries the space between these and the margin is sometimes whitish. The basal half of the wing is very dark brown, with a distinct line of demarkation, and on the primaries there is a dark spot within this field. Body, feet, eyes, and antennae, dark brown.

Female. Similar, but with a larger spot above and rather more whitish below. *Larva*, and food plant are unknown.

DIMENSIONS.

Spread of wings, from 1.00 to 1.10. Size of primaries, from .50 by .35 to .55 by .40. Size of secondaries, from .45 by .35 to .50 by .40. Length of antennae, from .25 to .30. Length of body, from .40 to .60.

OBSERVATIONS.

This species varies somewhat in amount of whitish on the margin of the secondaries and also in the amount of the chestnut markings above, as well as in the shade of dusky below. For comparisons with allied species, see Observations under *T. titus*. Occurs throughout New England.

HABITS.

The Brown Streaked Butterfly is not very uncommon throughout New England, but nothing appears to be known of its reproductive habits. It appears quite early in the season, from the first week in May until the middle of June.

45. THECLA NIPHON.

Black and White Banded Streaked Butterfly.

DESCRIPTION.

Sp. Ch. Size, medium. Primaries, rounded. Secondaries, narrow and well rounded, with about four distinct tooth-like projections on the outer border, near the inner angle, with corresponding notches, but without tails.

COLOR. Male. Above. Dark-brown, fringed with an interrupted band of white; the outer portion of both wings, excepting a narrow band, is bronzy-yellow, and the entire surface has bronzy and greenish reflections.

Beneath. Paler brown, fringed as above, inside of which is a narrow line of dark brown, followed by a series of whitish spots which are wider and rather bluish on the secondaries. On the primaries, is a series of yellowish dots, on which rests crescents of very dark brown. Then comes a zigzag band of white and dark brown, and on the upper portion of the wing, are two short, dark brown bars. On the secondaries, is a series of yellowish spots in zigzag bands, and on them rests a confluent band of dark brown triangles, within which is a zigzag band of white and dark brown, which on the lowest portion of the wing curves around and upward again, crossing the wing, with the white on the inside, and within this field thus formed, is a short brown bar. Crossing the base of the wing, is a white and brown band. Body, legs and eyes, dark brown, the last surrounded with white; antennae, ringed with black and white; club, reddish tipped.

Female. Duller above and with little of the bronzy yellow seen in the male, beneath similar.

Larva. Of the usual flattened form, downy, green in color, with a yellow stripe on the back and one on either side of it pale yellow, and near the field is a white line. The head is brown. Pupa, grayish, with four rows of small spots, the middle ones of which are indistinct and blackish, and the others are reddish. Food, the various species of pine.

DIMENSIONS.

Spread of wings, from 1.10 to 1.20. Size of primaries, from .55 by .30 to .60 by .35. Size of secondaries, from .45 by .35 to .50 by .40. Length of antennae, from .25 to .30. Length of body, from .30 to .40.

OBSERVATIONS.

There is some variation in this species, as there is often a rusty overwashing in the interspaces between the markings on the secondaries beneath, and the primaries are sometimes decidedly yellowish below, while the markings vary somewhat in width and intensity. For comparison with allied species, see Observations under head of *T. titus*.

HABITS.

This is one of the first Butterflies of this genus to appear in Massachusetts, frequenting sheltered woodlands in early May and appearing a little later further northward. I

have found this Butterfly feeding on the sweet scented flowers of the locust, but early in spring they are fond of resting in the bright sunlight in the woods, at which time they have the habit of closing their wings and throwing forward first one secondary then the other, not rapidly, but with a regular seesaw motion which gives the insects a peculiar appearance. This habit is, I believe, shared in common with some other members of this genus.

46. THECLA IRUS.

Pearly Streaked Butterfly.

DESCRIPTION.

SP. CH. Primaries, rather angular on the outer border, the outer point of which comes a little above the middle of the wing. The secondaries are rounded and provided with tooth-like projections along the entire border; the lowermost of these is twice the length of the others and curves downward.

COLOR. Male. Above. Smoky brown with greenish reflections, fringed with white, interrupted and banded with black. On the secondaries, near the inner angle, is a more or less distinct spot of chestnut red. The oval spot is from twice to three times as long as wide.

Beneath. Paler brown, fringed as above. On the primaries, is an interrupted band of dark spots in a greenish field, and inside of this is a white and brown band crossing the wing from the upper border to the lower branch of the middle vein, and within this is a short, dark brown band. The base of the wing is dark brown, but without any distinct line of demarkation. Secondaries with the outer portion of the wing decidedly whitish, and in this field, is a more or less distinct band of brown spots. The base of the wing is very dark brown, bordered by a zigzag band of black, outside of which is a white band, thus the line of demarkation is very abrupt and well defined.

Female. Similar, but duller above, with rather more chestnut on the outer portion of the secondaries, and there is much more whitish on the outer portion of the wing.

Larva. .55 long, flattened in form, and from the fourth to the eleventh segment is a series of elevated ridges, one to each segment, narrow in front and broad behind. The second segment is a broad, elevated, rolled collar in which the head is concealed. The body is covered with short brown hairs; color, purplish-red with a broad dark band in which is a paler line. There is a pale red line along the basal ridge which is greenish, and the head is greenish. Food, the fruit of the plum.

Pupa. .30 long, blackish with indistinct red bands, and there is a black stripe on either side of the abdomen.

DIMENSIONS.

Spread of wings, from 1.00 to 1.25. Size of primaries, from .45 by .30 to .55 by .40. Size of secondaries, from .30 by .35 to .35 by .40. Length of antennæ, from .25 to .30. Length of body, from .40 to .50.

OBSERVATIONS.

There is some variation in the size of the chestnut spot on the outer border of the upper portion of the secondaries, and considerable in the width and size of the markings beneath, in some specimens the white lines being nearly absent. The greenish tinging to the primaries is also variable in intensity and occasionally absent; for comparison with allied species, see Observations under head of *T. titus*. Occurs throughout New England, but is rare in some sections, while it is common in others.

HABITS.

Mr. Edwards who gives a most interesting account of this species, says that the eggs are laid on the flower stem of the wild plum, and hatch in five or six days, just in time for the young larvæ to feed upon the newly formed plumes. They moult in five days, and a second time in three or four days; then in five days more, a third time, and in eight days from this moult, they stop feeding and enter the pupa state, in which they remain all winter, emerging early the next spring, in May, as Butterflies.

47. THECLA LAETA.

Blue Streaked Butterfly.

DESCRIPTION.

SP. CH. Size, small. Primaries, narrow and pointed. Secondaries, square on the outer margin and without tails.

COLOR. Male. Above. Black, with the inner two thirds of the secondaries, bright blue.

Beneath. Pale blue, dusky at the base of the wings, fringed outwardly with reddish, and there is a band of reddish spots extending from the upper border of the secondaries, across the wings. Inside of the lower extremity of this band is a spot of dusky. There are two bands of reddish spots crossing the secondaries. Body, antennæ, and feet, dusky.

Female. Similar, but the blue above is confined to a central band on the outer portion of the secondaries, being entirely absent elsewhere. The larva and food plant appear to be unknown.

DIMENSIONS.

Spread of wings, from 1.05 to 1.15. Size of primaries, .55 by .30 to 60. by .35. Size of secondaries, .50 by .30 to 54 by .35. Length of antennæ, from .40 to .45. Length of body, from .25 to .30.

OBSERVATIONS.

Known at once by the small size and blue color above; for comparisons, see Observations under head of *T. titus*. Occurs in Canada, Maine, and West Virginia. The female is the *T. clothilde* of Edwards.

HABITS.

This beautiful little Butterfly has been taken in Canada, Maine, and West Virginia at widely separated intervals, but is an exceedingly rare species in collections.

48. THECLA TITUS.

Coral Streaked Butterfly.

DESCRIPTION.

Sr. Ch. Size, large. Primaries, somewhat angled on the outer border, the point of the angle coming a little above the middle of the wing. Secondaries, somewhat pear-shaped, the point being represented by the lower angle of the outer border, which is projected outward. There are no tails, scallops, nor notches.

Color. Male. Above. Dark smoky brown, with bronzy reflections, without any markings whatever, excepting the pale ashy oval spot on the primaries which is about twice as long as wide.

Beneath. A much paler shade of smoky brown, with bronzy reflections. There is a narrow black line within the fringe on the primaries. Inside this is a line of red spots on each of which, on the inner side, and resting against it, is a spot of black, and within this line is a somewhat zigzag band of white-ringed black dots. On the secondaries, inside the light colored fringe, is a dark brown line and within this is a light line, then follows a band of red spots, the last two of which, on the inner, becomes confluent, and on the inner and outer side of each is a black line, next is a zigzag line of white-ringed, black dots, and near the center of the wing are two white margined, black lines. Body, dusky above, whitish below. Feet, whitish. Eyes, brown, surrounded with white. Antennæ, white and black ringed. Club, tipped with reddish.

Female. Similar, but paler than the male and lacks the oval spot on the primaries and there are indications of reddish markings on the secondaries near the inner angle.

Larva. .71 long, elliptical in form, flattened on the lower side, dull green in color, with a yellowish tint, having a patch of rose color on the forward segments and another larger one on the hinder extremity. The body is thickly covered with very short, brown hairs. Head, small and shiny black.

Pupa. .45 long, pale glossy brown, thickly dotted with dark brown, which congregate and form an imperfect stripe on the lower portion of the abdomen. The surface is thickly covered with short brown hairs. Food, plum, cherry, and oak leaves.

DIMENSIONS.

Spread of wings, from 1.15 to 1.40. Size of primaries, from .65 by .40 to .55 by .35. Size of secondaries, from .55 by .40 to .48 by .45. Length of antennæ, from .35 to .40. Length of body, from .50 to .55.

OBSERVATIONS.

The principal variation in this species is in the size of the spottings below, but they are sufficiently distinct to be recognized. Occurs throughout New England.

Members of the genus *Thecla* may be distinguished by two characters, the dark, almost always unspotted upper surface and the presence of the peculiar oval mark on the primaries of the males. The various species may be known by the following comparative characters.

37, *Thecla ontario*. Has one tail, quite long, and a reddish spot above on the secondaries, but no short band in the center of the wings below, and has a blue spot near the anal angle of the secondaries below.

38, *strigosa*. Has the blue spot on the anal angle of the secondaries below and two tails, but differs from all others in having five bars of black and white crossing from the top of either wing.

39, *edwardsii*. Has the blue spot near the anal angle of the secondaries and a series of red spots outside the first band of spots on both wings and two short bars on the center of each wing, both the same width apart, and each spot on the second band on both wings is entirely surrounded with white.

40, *calanus* (*falacer* Harr.). Has the blue spot in the anal angle of the secondaries, but differs from 39 in having no red outside the outer band on the primaries, and the second band is marked with white on the outside only. Short central bands as in 39.

41, *acadica*. Resembles 39 below, but is very much paler and has the red markings of the anal angle extending over the blue spot, and the central lines on the secondaries very near together, the black occupying the entire space between them and having no lighter center.

42, *humuli*. The palest of all this genus, has a distinct W in the lower portion of the second band of spots on the secondaries over the red markings, which are two, and are over two black spots.

43, *smilacis*. Known at once by the green under surface, with the purplish markings.

44, *augustus*. Known by the dark color, dark basal portion to the wings below, which have no white markings between them and the outer portion, and also by the entire absence of tails.

45, *nippon*. Known at once by the reddish brown, upper surface, and numerous white and brown markings below, especially by the checkers at the base of the secondaries.

46, *irus*. Resembles No. 44, but has two short tails, and the black border to the basal portion of the secondaries, is lined outwardly with white.

47, *laeta*. Readily known by the blue marking to the wings above.

48, *titus*, (*mopsus*, Hubn.) Distinguished by the absence of tails, prominent, coral-red markings along the outer border of both wings, presence of the short line in the center of the secondaries, and absence of it in the primaries.

HABITS.

Although this species appears to be not uncommon in Massachusetts in early summer, it is not common in the more northern of the New England States. With us they occur in oak woods.

GENUS II. LYCENA. BLUE BUTTERFLIES.

GEN. CH. *Primaries, rather round terminally. Secondaries, rather round and without prominent tails. Colors above, blue or violet.*

Members of this genus, although without prominent tails, occasionally have a narrow, thread-like process, which resembles the tails of the last described genus. Sexes differ in coloration but there is never any oval spot on the primaries in the males. We have two species with us.

49. LYCENA PSEUDARGIOLUS.

Pale Blue Butterfly.

DESCRIPTION.

SP. CH. Size, medium. Primaries, well rounded. The secondaries are also well rounded and without any tail-like process.

COLOR. *Male. Above.* Azure blue, with the secondaries slightly paler, fringed with lighter.

Beneath. Very pale blue, with two rows of dusky spots near the outer border of the wings, a short bar across the central cell on the primaries, and more or less spots of dusky in the basal half of the secondaries. Body, dusky above, whitish below. Feet, whitish. Eyes, brown, white ringed. Antennae, ringed with black and white.

Female. Similar in color above, but the primaries are broadly banded above and on the outer border, with dusky. The secondaries have the upper margin dusky, and there is a row of dusky spots on the outer border. Similar to the male below.

Larva. Green and downy. The head is yellowish, with a middle stripe, and with oblique stripes on the sides, while there is a stripe near the feet, all dark green. The head is black.

Pupa. Reddish, wing envelopes, greenish, and the back has four rows of obscure spots. Food plants, *Actinomeris*, *Apios*, *Erythrina*, *Spiraea*, *Ceanothus*, *Cornus* and *Ilex*.

DIMENSIONS.

Spread of wings, from .90 to 1.10. Size of primaries, from .60 by .34 to .62 by .37. Size of secondaries, from .40 by .35 to .50 by .38. Length of antennae, from .20 to .25. Length of body, from .40 to .45.

OBSERVATIONS.

This is an exceedingly variable species and has several varietal names.

Violacea, has dark points on the secondaries, and paler dusky spots on the margin, while above the colors are deeper than in the type.

Neglecta, has the secondaries decidedly paler than the primaries above, while the markings below are very indistinct.

Lucia, is about typical above, but the marginal bands below are run together, forming one, and the spots in the center of the secondaries are fused together.

These forms are scarcely tenable, as all gradations occur between them, and occasionally we find a female which is wholly black above. Known by the blue color above and pale spotted under surface. Occurs throughout New England.

HABITS.

This species may be found flying through the woodlands, among the foliage of the trees, and along road sides, from early May until late in June. The eggs which are deposited shortly after the appearance of the Butterfly, require five days to hatch, and the larvæ feed twenty-four days, enter the pupa state, in which they usually remain some three weeks. Mr. Edwards says that some of the pupa hibernate and produce the form *violacea*, in the spring, whereas hibernating larvæ produce typical *pseudargiolus* in the spring.

50. LYCÆNA COMYNTAS.

Tailed Blue Butterfly.

DESCRIPTION.

SP. CH. Size, rather small. Primaries, quite narrow and rounded. Secondaries, rounded and provided with a thin thread-like tail growing from the termination of the lowest branch of the lower vein.

COLOR. *Male. Above.* Dark violet blue, fringed with lighter, margined with dusky, which becomes broken into spots on the secondaries, one or two of the innermost of which have an orange crescent resting on them.

Beneath. Bluish-white, with a narrow dusky marginal line, within which is a row of dusky spots, then a row of dusky crescents and within this is a row of white-ringed dusky spots, a bar in the center of both wings and a few dusky dots in the basal half of the secondaries. Just above the tail are two black dots surrounded with greenish metallic scales, while above them and on either side are three or four orange spots. Body, dusky above, whitish below. Feet, whitish. Eyes, brown, white-ringed. Antennæ, ringed with black and white.

Female. Similar, but dusky above, nearly obscuring the violet. *Larva*, .36 long, largest before, sloping gradually backward, greenish in color, with darker lines along the back, and with oblique purplish-red lines on the sides. Head, black. Body, covered with fine white hairs.

DIMENSIONS.

Spread of wings, from 1.00 to 1.20. Size of primaries, from .52 by .30 to .55 by .35. Size of secondaries, from .45 by .25 to .50 by .30. Length of antennæ, from .25 to .30. Length of body, from .40 to .45.

OBSERVATIONS.

Variations appear to be merely in the shade of color and in the size of the orange markings on the secondaries below. Known by the violet color, thread-like tail, and paler shade below. Occurs throughout New England, but rather rare north of Massachusetts.

HABITS.

The eggs of this species hatch in four days. The larvæ moult four times, living in this stage about fourteen days, when they enter the pupa state, in which they remain some ten days, then emerge as Butterflies. This species is on the wing in Massachusetts, about the first of June.

GENUS III. CHRY SOPHANES. COPPER BUTTERFLIES.

GEN. CH. Primaries, rather round terminally. Secondaries, rather round, without tails. Colors above, coppery-red, spotted with black.

Members of this genus are entirely without tails. Sexes, differ but little in coloration. We have three species with us.

51. CHRY SOPHANUS THOE.

Large Copper Butterfly.

DESCRIPTION.

SP. CH. Size, very large. Secondaries quite long nearly equaling the primaries in length.

COLOR. *Male. Above.* Primaries, pale coppery red fringed with lighter, bordered with blackish, which is inclined to break up into spots on the inside. Then inside this is a row of about eight spots and in the central cell are three more, while below these is another spot, all dusky. Secondaries dusky-red for the basal three fourths, and in this field are first a line of black spots, then two in the central cell, and others at the base. Outer fourth of wing bright coppery-red fringed with white which is bordered and interrupted internally with black, and on this band rests a series of six black spots.

PLATE VI.



EXPLANATION OF FIGURES ON PLATE VI.

70. *Papilio turnus*, Yellow Swallow-tail, male, upper side; 70a, the lower side of same.
41. *Thecla acadica*, Pale Streaked Butterfly, male, upper side; 41a, lower side of same.
39. *Thecla edwardsii*, Edwards' Streaked Butterfly, male, upper side; 39a, lower side of same.
49. *Lycæna pseudargiolus*, Pale Blue Butterfly, male, upper side; 49a, lower side of same, 49b; female, upper side of same; 49ac male, lower side of same, var. *violacea*; 49bc, female, upper side of same, var. *neglecta*; 49d, lower side of same; 49dc, male, var. *lucia*, lower side.
73. *Eudamus tityrus*, Silver-spotted Tailed Skipper, male, upper side; 73a, lower side of same.
38. *Thecla strigosa*, White-bordered Streaked Butterfly, male, upper side; 38a, lower side of same.
72. *Eudamus proteus*, Long-tailed Skipper, male, upper side; 72a, lower side of same.
74. *Eudamus lycidas*, Glaucous-winged Tailed Skipper, male, upper side; 74a, lower side of same.
93. *Pamphila sassacus*, Brown-bordered Yellow Skipper, male, upper side; 93a, lower side of same; 93b, female, upper side of same.
102. *Pamphilu cernes*, Small Brown and Yellow Skipper, male, upper side; 102a, lower side of same; 102, in lower right hand corner, female, upper side of same.
86. *Amblyscirtes vialis*, Four-spotted Black Skipper, male, upper side; 86a, lower side of same.
64. *Pieris oleracea*, White Butterfly, male, upper side; 64a, the lower side of the same.
71. *Papilio asterias*, Black Swallow-tail, female upper side; 71a, the lower side of same.

Beneath. Similar to the above on the primaries, but bordered with ashy, in which are first a black line, then two bands of spots. Secondaries, with the dusky replaced by ashy, and there are three bands of black spots, while those in the basal portion are more chestnut. Body, blackish above, whitish below; feet, whitish; eyes, black, white ringed; antennæ, black and white ringed, club, reddish tipped. *Female.* Similar but paler above.

DIMENSIONS.

Spread of wings, from 1.50 to 1.65. Size of primaries, from .75 by .45 to .80 by .48. Size of secondaries, from .60 by .47 to .67 by .52. Length of antennæ, from .35 to .40. Length of body, from .55 to .60.

OBSERVATIONS.

Known at once by the coppery red above, ashy under surface to the secondaries, and large size. Occurs west and south, rare in New England.

HABITS.

The Large Copper Butterfly is a common species west and south and occurs as a rare straggler in all of the New England States, excepting Maine where it has never been taken. In general habit it closely resembles the Small Copper Butterfly.

52. CHRY SOPHANUS AMERICANUS.

Small Copper Butterfly.

DESCRIPTION.

Sp. Ch. Size, small. Secondaries, rounded, but angled on the inner corner, and somewhat shorter than the primaries.

Color. Male Above. Bright coppery red on the primaries, fringed with paler and bordered with black, inside of which is a line of black spots, and in the central cell are two more. Secondaries dusky, and in the basal portion are some black spots, there is a central submarginal band of bright coppery red which is encroached upon externally by four black spots.

Beneath. On the primaries, similar to above, but paler, bordered with ashy in place of black and in this are some black spots; all the black spots are white-ringed and there is an extra one in the base of the central cell. Secondaries, yellowish, with a line of black spots, some spots in the basal portion, and a central, submarginal, zigzag band of coppery red. Body, dusky above, whitish below. Feet, whitish. Eyes, brown. Antennæ, ringed with black and white.

Larva. 1.00 long, elliptical in form, flattened below, dull rosy-red in color, yellowish on the side, with a dark red line along the middle of the back. Body, downy.

Pupa. About .50 long, oval in form, attached by the end of the abdomen, and closely bound to the object to which it is attached. Food plant, sorrel.

DIMENSIONS.

Spread of wings, from 1.00 to 1.30. Size of primaries, from .50 by .35 to .60 by .40. Size of secondaries, .40 by .35 to .50 by .40. Length of antennæ, from .27 to .33. Length of body, from .40 to .45.

OBSERVATIONS.

There is considerable variation in the spottings in this species. In some, the band on the primaries is quite narrow and there are only two spots, these being in the central cell, whereas in others the margin is greatly widened and the spots are elongated so as to fuse with the first spot in the central cell, forming a large black patch. In the first case the spots below are often normal, but in the last they are considerably enlarged, and there are gradations between these two extremes, but all occur at the same season, often in the same locality. Common throughout New England.

HABITS.

Early in May, in Massachusetts and a little later further north, the pretty little Copper Butterfly may be seen fluttering with a leisurely movement, among the low plants by the road ways or on barren hill-sides. This is one of the most familiar species and is very abundant, remaining with us until late in August. As the larvæ feed upon the worthless sorrel, the Copper Butterflies are among the few species decidedly beneficial to man.

53. CHRY SOPHANUS EPIXANTHE.

Brown Copper Butterfly.

DESCRIPTION.

Sp. Ch. Size, small. Both wings are well rounded.

Color. Above. Smoky brown, with violet reflections, fringed with lighter, and there are two or three black spots on the center of the primaries and three on the secondaries and often there is a line of spots between these and the outer

border, and there is a band of orange along the outer border of the secondaries, enclosing brown spots.

Beneath. Yellowish-ash, with a line of black and orange spots on the outer border, which becomes indistinct on the upper portion of the wing. Inside this, is a zigzag band of black spots, and five others in the basal portion of the wing. Along the border of the secondaries is a wavy line of orange. Body, brown above, whitish beneath. Feet, whitish; eyes, dark brown, white ringed, antennæ, ringed with black and white.

DIMENSIONS.

Spread of wings, from .90 to 1.05. Size of primaries, from .48 by .30 to .50 by .32. Size of secondaries, from .40 by .30 to .42 by .35. Length of antennæ, from .22 to .25. Length of body, from .37 to .40.

OBSERVATIONS.

Variations consist in the greater or less number of spottings above. Known by the nearly uniform, smoky brown color above, and decidedly yellowish-ash, spotted under surface. Occurs throughout New England.

HABITS.

I have found this species common in low, peaty meadows in Massachusetts, in July. They fly low, seldom out of the tops of the grass. They are quite sluggish, but like all of the members of this family are easily alarmed, when they conceal themselves in the grass and remain quiet until the cause of their solicitude has departed.

GENUS IV. FENISECA. MOTTLED BUTTERFLIES.

GEN. CH. *Primaries, somewhat angled terminally. Secondaries, rounded, and without tails. Colors, yellowish, prominently mottled with brown. Antennæ, long.*

The most prominent features in members of this genus are the brown mottlings and long antennæ, but the palpi are very short.

54. FENISECA TARQUINIUS.

Brown Mottled Butterfly.

DESCRIPTION.

SP. CH. Size, rather large. Primaries, considerably longer than the secondaries. Club of antennæ, enlarging gradually.

COLOR. *Above.* Dull orange yellow. Primaries, bordered with brown, fringed with lighter. The bordering encroaches upon the wing at the apex and forms quite a large square patch. The basal portion of the central cell and a small portion of the cell below it, a spot below this, and another elongated spot in the lowermost cell are dark brown, secondaries, with a patch at the base, extending along the upper border, and a few small spots in a band along the outer border, also brown.

Beneath. Paler than above on the primaries. The markings are reddish-brown, that on the border, especially at the apex, is overwashed with whitish. The square patch is divided into three white ringed spots, and the elongated spot in the cell is divided into three isolated spots which are white edged. Secondaries, rusty brown, whitish on the upper angle, and the entire surface of the wing is divided by white rings into various zigzag mottlings, these are, however, most prominent on the basal portions. Body above, dusky, whitish below; feet, whitish; eyes, dark brown, white ringed; antennæ, black and white ringed. Sexes, similar.

DIMENSIONS.

Spread of wings, from 1.30 to 1.40. Size of primaries, from .60 by .40 to .65 by .45. Size of secondaries, from .45 by .40 to .50 by .43. Length of antennæ, from .35 to .37. Length of body, from .45 to .50.

OBSERVATIONS.

There is considerable variation as to the extent of the brown markings, and the number of white rings on the secondaries below, but may be at once distinguished by its long antennæ, with its gradually enlarging club, elongated spots on the primaries above, and white rings to the secondaries below.

HABITS.

I have a specimen of this southern and western species before me which was taken in Reading, Mass., July second, 1885, by Mr. H. F. Gilbert, who informs me that in flight it resembles *Melitæa tharos*, for which he at first mistook it. Although this little Butterfly has been taken three or four times, even in Maine, it is rare in any portion of New England. The larvæ of this species feed upon wild current.

FAMILY VI. PIERIDÆ. PLAIN BUTTERFLIES.

Inner border of secondaries, not grooved. Feet, six, none rudimentary. Central cell, closed. Club of antennæ, enlarging gradually.

Members of this Family are of varying size, but of light colors, being either white, yellow or orange, more or less prominently marked with black.

GENUS I. CALIDRYAS. LARGE YELLOW BUTTERFLIES.

GEN. CH. *Primaries, rather short and rounded at the apex. Secondaries, straight on outer edge, rounded on both angles. Colors, yellow, and a silvery point in the central cell of both wings below. Antennæ, short, with the club enlarging gradually and a third the entire length.*

The most prominent features in members of this genus, aside from those given above, are the large size, absence of any black border to the wings, or other conspicuous markings. We have one species with us.

55. CALIDRYAS EUBULE.

Citron Butterfly.

DESCRIPTION.

SP. CH. Size, large. Primaries, rounded on the upper border.

COLOR. *Male.* Lemon yellow on both surfaces, margined with rufous; no markings above. Two rufous ringed, silvery spots in the center of the secondaries, and one on the primaries, and more or less rufous dots are scattered over the lower surface of the secondaries. Body and feet, greenish-yellow; top of head and palpi, ferruginous. Antennæ, rose color.

Female. Similar, but with the rufous spot in the center of the primaries above, and the spots below, greatly elongated and more numerous.

Larva. Bright yellow, dotted with black. Food, orange leaves.

DIMENSIONS.

Spread of wings, from 2.50 to 2.75. Size of primaries, from 1.25 by .70 to 1.40 by .75. Size of secondaries, from 1.10 by 1.00 to .90 by .95. Length of antennæ, from .50 to .55. Length of body, from .85 to .95.

OBSERVATIONS.

Variations consist in the greater or less amount of marking below, but may be at once recognized by the yellow unbordered wings. Common throughout the south, rare in southern New England.

HABITS.

This fine Butterfly is one of the most prominent of the tribe in the fields of the south, moving from flower to flower with a leisurely, well sustained flight, occasionally moving rapidly from place to place.

GENUS II. COLIAS. BORDERED YELLOW BUTTERFLIES,

GEN. CH. *Primaries, quite long, pointed at apex, with a black spot in central cell below, also a silvery one on that of the secondaries.*

Antennæ, rather short, with the club about one fourth its length. Members of this genus are of prominent colors, being either yellow or orange, but with a black border to both wings.

56. COLIAS PELIDNE.

Bordered Green Butterfly.

DESCRIPTION.

SP. CH. Size, small. Primaries, round at tip. Secondaries, well rounded.

COLOR. *Male. Above.* Sulphury yellow, fringed with rosy, bordered with black, more widely on the primaries. Base of wings, dusky. There is a small black point in the central cell.

Beneath. Paler yellow, the dark border showing indistinctly, plentifully sprinkled on secondaries and along the upper border of the primaries with green. There is a white centered black spot in the central cell of primaries and a silvery centered, rosy ringed spot in the central cell of the secondaries. Body, dusky above, greenish below; head, antennæ, and feet, rosy.

Female. White above, without any border, or at least, only a gray one. Beneath, similar to the male but paler, and shows no border. *Larva*, unknown.

DIMENSIONS.

Spread of wings, from 1.60 to 1.70. Size of primaries, from .85 by .50 to .90 by .55. Size of secondaries, from .65 by .60 to .70 by .65. Length of antennæ, from .30 to .35. Length of body, from .65 to .70.

OBSERVATIONS.

Known from the closely allied *philodice*, by the absence of any orange spot on the secondaries above, and double spot beneath, as well as greenish color below.

HABITS.

This species is common in Labrador but occurs in New England only as a rare straggler. Nothing appears to be known of its reproductive habits.

57. COLIAS PHILODICE.

Bordered Yellow Butterfly.

DESCRIPTION.

SP. CH. Size, medium. Primaries, moderately pointed. Secondaries, well rounded.

COLOR. *Male. Above.* Sulphury yellow, bordered on both wings with black. In the central cell of the primaries, is a black spot, and in that of the secondaries, an orange spot, while above it, is one of the same color.

Beneath. Darker, without the black border, with a line of dusky spots near the outer margin of both wings. The black spot on the primaries has a light center, and those on the secondaries are larger, with reddish ringed silver centers; both wings are fringed with rose. Body and palpi, yellow. Feet and antennæ, rose. Eyes, green.

Female. Similar below, but the black border above on the primaries encloses more or less spots of yellow.

Larva. Measures 1.00, cylindrical in form, tapering slightly. Downy and dark green in color, lighter beneath with a creamy white line along the side, through the middle of which runs a broken crimson line, and below this is often a series of black spots.

Pupa. Yellowish-green, with a lighter stripe along the side. Food plants, clover, lucern, buffalo pea, and sometimes cultivated peas.

DIMENSIONS.

Spread of wings, from 1.50 to 2.00. Size of primaries, from .70 by .50 to 1.05 by .65. Size of secondaries, from .50 by .40 to .80 by .75. Length of antennæ, from .24 to .35. Length of body, from .55 to .70.

OBSERVATIONS.

This species varies greatly in size and also in color. Some females are white, with the usual dark markings, this is the *C. alba* of authors, and on the other hand some females are wholly black above, and all gradations occur between this and the typical color. I have figured a dark specimen on page VII, 57c, a female, taken at Faulkner, Mass., by Mr. C. C. Beale, who has kindly loaned it to me. Known in whatever stage by the black border above, with the black points beneath. Occurs abundantly throughout New England.

HABITS.

The Black-bordered Yellow Butterfly deposits its eggs on the upper side of the clover leaves, one egg to each leaf. They hatch in about a week; the larva moult four times, and from the time of the laying of the eggs to the appearance of the Butterfly, is about forty days. These small Butterflies occur in great numbers in early May, and continue until late in September, during which time, three or four broods are hatched. Prof. Fernald thinks that the larvæ do great injury to the clover, and he estimated that at least one fourth of all the clover growing in a certain field, in which he made his observations, was eaten by them.

58. COLIAS LAURENTINA.

Cape Breton Butterfly.

DESCRIPTION.

SP. CH. Size, medium. Primaries, rather rounded. Secondaries, rounded.

COLOR. *Male. Above.* Sulphury-yellow fringed with rose, bordered with black. There is a black point on the primaries and an orange one on the secondaries.

Beneath. Greenish, without any black submarginal points. There is a white centered, black spot on the primaries and a rufous ringed, silvery, double spot on the secondaries. Body, dusky above, greenish below, antennæ and feet rose.

Female. Similar, but the black on the secondaries does not extend to the inner border of the wing.

DIMENSIONS.

Spread of wings, from 1.50 to 2.00. Size of primaries, from .70 by .50 to 1.05 by .65. Size of secondaries, from .50 by .40 to .80 by .75. Length of antennæ, from .25 to .35. Length of body, from .55 to .65.

OBSERVATIONS.

This species is known from *C. philodice* by the absence of the submarginal black points below and in the female by this and the shortness of the black border to the secondaries.

HABITS.

This species appears to be quite abundant on Cape Breton and is rare in Maine. The larva is unknown.

59. COLIAS EURYTHEME.

Bordered Yellow and Orange Butterfly.

DESCRIPTION.

SP. CH. Size, rather large. Primaries, pointed. Secondaries, rounded.

COLOR. *Male. Above.* Yellowish-orange, fringed with rose, becoming yellow on the upper portion of the primaries and lower portion of the secondaries. Both wings are bordered with brown, widest on the apex of the primaries and gradually diminishing to the lower border of the secondaries, while the veins are yellow. There is a black point on the primaries, and an orange spot on the secondaries.

Beneath. Greenish yellow, fringed with rose; orange on the base of the primaries. There is a submarginal row of dusky spots on the primaries, and of brownish on the secondaries. A brown spot on the upper border of the secondaries, and in the center are two silver spots double ringed with rufous, and a black, light centered spot on the primaries. Body, dusky above, yellowish below; feet, yellow, eyes, brown; antennæ, rosy.

Female. Differs in having the orange above confined to the base of the wings, and in having yellow spots in the dark border.

DIMENSIONS.

Spread of wings, from 1.95 to 2.05. Size of primaries, from 1.00 by .60 to .95 by .55. Size of secondaries, from .80 by .70 to .75 by .60. Length of antennæ, from .30 to .35. Length of body, from .75 to .80.

OBSERVATIONS.

This species varies much as in *Colias philodice*; known at once by the yellow and orange, with the reddish orange spot on the secondaries. Rare in Massachusetts and southward.

HABITS.

This species is common in the west and south, but very rare in New England, and does not occur north of Massachusetts. I have a specimen, the one which I have figured, that was taken in Belmont, Mass., and kindly loaned me by Mr. Winthrop Brown.

GENUS I. TERIAS. YELLOW AND ORANGE BUTTERFLIES.

GEN. CH. *Primaries, rounded at tip and narrow. Secondaries, large, nearly as long as the primaries and well rounded. Antennæ, long, club short and enlarging suddenly.*

The colors of members of this genus are orange and yellow prominently marked with black. We have three species with us.

60. TERIAS LISA.

Little Bordered Yellow Butterfly.

DESCRIPTION.

SP. CH. Size, small. Secondaries, rather shorter than the primaries.

COLOR. *Male. Above.* Sulphury yellow, fringed with rosy, bordered with black, which is widest on the apex of the primaries. Wings, sprinkled with dusky at the base.

Beneath. More orange yellow, without the black border. Near the apex of the primaries is a small rose spot, and there is a larger one on the upper angle of the secondaries, and an indistinct rusty band crosses the wing inside of this. There is a black point in each wing above the central cell which is not perceptible on the upper surface of the secondaries. Body, dusky above, yellow beneath. Feet, yellow. Eyes, brown. Antennæ, ringed with black and yellow.

Female. Similar, but rather more dusky above. *Larva*, green, with four whitish bars along the body. *Pupa*, also green. Food plant, clover and other leguminous plants.

DIMENSIONS.

Spread of wings, from 1.15 to 1.45. Size of primaries, from .60 by .35 to .75 by .40. Size of secondaries, from .55 by .40 to .60 by .50. Length of antennæ, from .25 to .30. Length of body, from .50 to .60.

OBSERVATIONS.

Varies somewhat in ground color; specimens from Massachusetts are rather paler than those taken in Florida. Known by the small size, black border, and absence of silver spot on the secondaries beneath. Somewhat rare in New England.

HABITS.

This is a low flying, rather sluggish insect. They are exceedingly abundant in open fields in Florida until late in November and appear again in February. They are rare in Massachusetts in July, and do not occur much north of this point.

61. TERIAS DELIA.

Banded Yellow Butterfly.

DESCRIPTION.

SP. CH. Primaries, narrow and rounded. Secondaries, nearly as long as the primaries.

COLOR. *Male. Above.* Pale yellow, fringed with lighter, both wings bordered with black, and the base of the wings and upper margin of the primaries are dusky. There is a wide, distinct band of black extending from the base of the primaries nearly to the outer border, and beneath on the lower border of the wing is a narrow edging of orange. Beneath, paler yellow sprinkled with dusky and with the lower border of the primaries dusky. Body, dusky above, yellowish beneath, feet yellowish. Antennæ, ringed with black and white. Eyes, brown.

Female. Similar, but with the black markings not as extended.

Larva. Green with a longitudinal white line above the feet. Pupa, also green.

DIMENSIONS.

Spread of wings, from 1.10 to 1.50. Size of primaries, from .60 by .35 to .65 by .40. Size of secondaries, from .50 by .40 to .55 by .45. Length of antennæ, from .25 to .30. Length of body, from .55 to .60.

OBSERVATIONS.

Varies somewhat in extent of dark markings. Known at once by the black border and longitudinal band on the primaries. Occurs south, rare in New England.

HABITS.

This little Butterfly does not appear to be as common as the last species, and is even more sluggish in movement, flying low, seldom rising out of the herbage. It is very rare in New England and is confined to the southern portions.

62. TERIAS NICIPPE.

Black-bordered Orange Butterfly.

DESCRIPTION.

SP. CH. Size, large. Primaries, square on the outer border. Secondaries, long and rounded.

COLOR. *Male. Above.* Deep orange, lighter on the inner border of the secondaries, fringed with rose and bordered with black. There is a black point in the central cell of the primaries.

Beneath. Paler. There are a few dusky spots along the upper border of the primaries, another near the upper border of the secondaries, while there is an indication of a dusky band across the secondaries; apex of primaries and whole surface of secondaries marbled with reddish-orange. Body, dusky above, orange beneath. Feet, orange. Eyes, brown. Antennæ, ringed with black and white.

Female. Similar, but the black border to the wings above, does not reach the lower border, and on the secondaries is confined to a spot on the upper portion. Beneath, paler and the dusky markings are not as distinct.

Larva. Pale green with a whitish line down the back, a white line on the side, before which are five yellow points.

Pupa. Green, sprinkled with rusty.

DIMENSIONS.

Spread of wings, from 1.80 to 2.05. Size of primaries, from .87 by .50 to 1.00 by .75. Size of secondaries, from .70 by .60 to 1.00 by .75. Length of antennæ, from .40 to .50. Length of body, from .65 to .75.

OBSERVATIONS.

There is some variation in shade of color above and in the extent of the dark markings, but may be at once distinguished by the orange color and black border.

HABITS.

I have found the Black-bordered Orange Butterfly common in Florida until the middle of November, at which time there was evidently a fresh brood, as unworn specimens were constantly being taken. This species occurs in open fields and is rather sluggish in flight. It is exceedingly rare in New England, and only occurs in the more southern portions.

GENUS III. PIERIS. WHITE BUTTERFLIES,

GEN. CH. *Primaries, long, not pointed. Secondaries, long, narrow and rounded. Antennæ, longer than one half the length of body, with the club enlarging suddenly, and less than a fourth the entire length.*

In the two preceding genera the antennæ are about half as long as the body, but in this genus it exceeds this length. The colors are white and there is sometimes a black point on the primaries above, but no silvery spot on the secondaries below.

63. PIERIS RAPÆ.

Cabbage Butterfly.

DESCRIPTION.

SP. CH. Size, medium. Secondaries, nearly as long as the primaries which are well angled at the apex.

COLOR. *Male.* White on both surfaces, blackish at the apex of primaries and at base of the wings above, overwashed on the secondaries below with yellowish and sprinkled with dusky. There is one point of dusky in the cell below the central, on the primaries above, and below this is a second spot; under this, on the secondaries above, is a spot on the upper border. Body, dusky above, whitish below. Feet, whitish. Antennæ, ringed with black and white.

Female. Similar, but with an additional spot on both sides of the secondaries in the cell below the central.

Larva. About 1.75 long, pale green in color, with a yellow line along the back, and a row of yellow spots on the side.

Pupa. .75 long, with projecting ridges and angular points on the back, and the head furnished with a tapering horn. Color, varying from green through ashy-gray to flesh color, dotted with black. Food plants, cabbage and allied plants.

DIMENSIONS.

Spread of wings, from 1.50 to 2.00. Size of primaries, from .85 by .50 to .95 by .55. Size of secondaries, from .70 by .50 to .80 by .55. Length of antennæ, from .40 to .45. Length of body, from .60 to .75.

OBSERVATIONS.

A male form of this species, sulphury yellow in color, has been described by Mr. Scudder as *novangliæ*, but I have never met with it. Somewhat variable in color, but at once recognized by the white color and presence of spots on the primaries.

HABITS.

The Cabbage Butterfly was introduced into Canada about 1857, and was first taken in Quebec in 1859; was abundant in the vicinity of this city in 1863; in 1864 it had spread at least forty miles from the city, and in 1866 had visited northern New England. In 1868, it was found as far south as Winnipiseogee, and in 1869 occurred not only in Boston, but stragglers were taken as far south as New Jersey, and now it is so abundant throughout New England and Canada, that the ravages committed by its larvæ on the cabbage crop, amount to thousands of dollars annually.

The eggs are deposited on the lower side of the leaf and hatch in about a week. The larvæ feed rapidly, often eating into the center of the cabbage head. They moult three times before entering the pupa state. Those which occur in early June, produce Butterflies that appear in September, and these in turn produce pupa which hibernate and emerge the following June as Butterflies.

The latest remedy for destroying the larvæ, is to churn kerosene oil and milk together for fifteen minutes, and mix the butter thus formed with water, and apply to the plants. This will kill the insects without injury to the cabbage.

64. PIERIS OLERACEA.

White Butterfly.

DESCRIPTION.

SP. CH. Size, rather large. Primaries and secondaries, both well rounded.

COLOR. *Above.* White, slightly grayish at the base of the wings, on the apex of the primaries, and often along the veins of both wings.

Beneath. White, yellowish on the secondaries, with a line along the veins, especially of the primaries, dusky, shoulders of secondaries, orange. Body, dusky above, whitish beneath. Antennæ, ringed with black and white.

Larvæ. 1.50 long, cylindrical in form, green in color, slightly spotted with darker along the sides.

Pupæ. 1.00 long, pale green or white in color and resembles in form the last species; food plants, cabbage and its allies.

DIMENSIONS.

Spread of wings, from 1.70 to 1.80. Size of primaries, from .90 by .50 to 1.00 by .60. Size of secondaries, from .75 by .50 to .80 by .55. Length of antennæ, from .40 to .45. Length of body, from .60 to .50.

OBSERVATIONS.

This species is never perfectly white as there are always some grayish scales at the base of the wings and at the apex of the primaries, and it varies from this to darker than the specimen figured on plate VI, No. 64. The secondaries are often greenish above, and yellow below, while the primaries are occasionally spotted as in *P. rapæ*. Known at once from *rapæ* by the absence of the spot on the upper edge of the secondaries, and generally by the dark lines along the veins beneath. Occurs throughout New England, but rare in eastern Massachusetts.

HABITS.

This species appears quite frequently in some portions of New England, but is not common in eastern Massachusetts. The larvæ feed upon the cabbage and other similar plants. The perfect insect appears in May, lays its eggs about the last of the month; these hatch in six days, the larvæ feed about three weeks, enter the pupa state in which they remain ten or twelve days, and produce Butterflies that appear in August; then these produce larvæ that enter the pupa state, in which they hibernate.

65. PIERIS PROTODICE.

Banded White Butterfly.

DESCRIPTION.

SP. CH. Size, medium. Primaries, long and quite pointed. Secondaries, short and well rounded.

COLOR. *Male*. White, with the basal portion of the wings and apex of primaries, dusky. There is a band of the dusky crossing the primaries, from the upper margin to the central cell, midway of the wing, and below this on the lower border of the wing is a corresponding band. In the center of the wing is a short submarginal band, while above it is an indication of another, all dusky. Beneath, similar. Body, dusky above, whitish below. Eyes, brown. Antennæ, ringed with white and black.

Female. With all the markings of the male enlarged and with a marginal row of triangular spots on the primaries. The secondaries have a dusky marginal band enclosing lozenge-shaped spots of white.

Larvæ. 1.15 long, cylindrical in form, greenish-blue, with four yellow stripes, dotted with black and covered with fine hairs.

Pupa. .75 long, bluish gray dotted with black; form as that of other species of the genus, but with fewer protuberances. Food, cabbage and allied plants.

DIMENSIONS.

Spread of wings, from 2.00 to 2.25. Size of primaries, from 1.00 by 1.60 to 1.05 by 1.63. Size of secondaries, from .80 by .55 to .85 by .60. Length of antennæ, from .40 to .50. Length of body, from .75 to .80.

OBSERVATIONS.

Known at once by the white color and markings as described. As seen, the female which is figured on plate V, No. 65, differs considerably from the male.

HABITS.

This is a northern species but occurs in Massachusetts rarely, and I have two specimens taken in Belmont, and kindly loaned me by Mr. Winthrop Brown. The larvæ feed upon the cabbage, and prove very destructive in some sections of the South. This Butterfly appears in July, August, and September.

GENUS V. ANTHOCARIS. ORANGE-SPOTTED BUTTERFLIES.

GEN. CH. Primaries, produced into a point above the middle of the wing. Secondaries, well rounded. There is a black point on primaries.

There are no points on the secondaries. Antennæ, long, terminating in an abrupt club. Members of this genus are remarkable for the peculiar orange markings on the primaries. The body is long.

66. ANTHOCARIS GENUTIA.

White Orange-spotted Butterfly.

DESCRIPTION.

SP. CH. Size, medium. There is an inward curve to the outer border of the primaries beneath the central point.

COLOR. *Male*. *Above*. White, bordered with an indistinct band of black. Base of wings, dusky and the secondaries are mottled with dusky. A large patch in the apex of the primaries, orange-yellow; spot in central cell of primaries, black.

Beneath. White, margined as above, with the apex of the primaries marbled with dusky, but there is no orange.

PLATE VII.



EXPLANATION OF FIGURES ON PLATE VII.

57. *Colias philodice*, Bordered Sulpher Butterfly, male, upper side; 57a, lower side of same; 57b, female, albino, upper side; 57c, female, upper side, melanistic.

75. *Eudamus bathyllus*, White-spotted Tailed Skipper, male, upper side; 75a, lower side of same.

76. *Eudamus pylades*, Dark-brown Tailed Skipper, male, upper side; 76a, lower side of same.

77. *Thanaos persius*, Six-spotted Banded Skipper, male, upper side; 77a, lower side of same.

80. *Thanaos brizo*, Large Bluish-winged Skipper, male, upper side; 80a, lower side of same.

82. *Thanaos juvenalis*, Seven-spotted Banded Skipper, male, upper side; 82a, lower side of same.

59. *Colias eurytheme*, Bordered Yellow and Orange Butterfly, male, upper side; 59a, lower side of same.

78. *Thanaos lucilius*, Five-spotted Banded Skipper, male, upper side; 78a, lower side of same.

79. *Thanaos icelus*, Small Bluish-banded Skipper, male, upper side; 79a, lower side of same.

83. *Pholisora catullus*, White-dotted Black Skipper, male, upper side; 83a, lower side of same.

88. *Pamphila metea*, White-banded Skipper, male, upper side; 88a, female, lower side.

89. *Pamphila massasoit*, Yellow Cross Skipper, male, upper side; 89a, female, lower side; 89b, female, upper side.

90. *Pamphila delaware*, Yellow-winged Skipper, female, upper side; 90a, lower side of same.

92. *Pamphila zabulon*, Orange and Brown Skipper, male, upper side; 92a, lower side of same.

87. *Amblyscirtes samoset*, Yellow-fringed Brown Skipper, female, upper side; 87a, lower side of same.

68. *Papilio troilus*, Green-spotted Swallow-tail, male, upper side; 68a, lower side of same.

and the entire surface of the secondaries is marbled with yellowish and dusky. Body, dusky above, whitish beneath; feet whitish. Antennæ, ringed with black and white. Eyes, brown.

Female. Similar, but lacks the orange above as well as below.

DIMENSIONS.

Spread of wings, from 1.60 to 1.70. Size of primaries, from .80 by .40 to .85 by .45. Size of secondaries, from .65 by .50 to .70 by .55. Length of antennæ, from .30 to .35. Length of body, from .60 to .65.

OBSERVATIONS.

Known at once from all of our New England Butterflies, by the white color, marblings on the secondaries below, and orange spot on the primaries. Occurs west and south; rare in Massachusetts and northward.

HABITS.

This species is very rare in New England, though specimens have been taken in Connecticut and, I believe, in western Massachusetts. There are two broods in a season, the first of which appears in July. The flight of this species is said to be low and swift, with a peculiar tremulous motion.

FAMILY VII. PAPILIO. TAILED BUTTERFLIES.

Primaries, long and pointed. Secondaries, scalloped and provided with tails. Antennæ, long with the club rounded terminally. Central cell, closed.

Members of this Family are of varying size, but of bright colors, being either white, yellow, or orange, more or less prominently marked with black.

GENUS I. SWALLOW-TAILED BUTTERFLIES.

GEN. CH. *Size, large. Secondaries, provided with conspicuous tails.*

Members of this genus are by far the largest and most showy Butterflies which occur with us. The larvæ are furnished with horns that are thrust out from sheaths in the head at the will of the insect, and a round knob at the end gives out a more or less powerful odor.

67. PAPILIO PHILENOR.

Orange-banded Butterfly.

DESCRIPTION.

SP. CH. *Size, small. Primaries, long and pointed. Tails of secondaries, not especially long, and not enlarged terminally.*

COLOR. Above. Brownish black, with brilliant, metallic, greenish reflections, especially on the primaries. There is an interrupted marginal fringe of whitish, and a submarginal row of whitish spots on the secondaries and sometimes on the primaries.

Beneath. Dark brown, margined as above on the primaries but more distinctly on the secondaries, greenish only on the outer two thirds of the secondaries. A submarginal row of spots extends from the lower border of primaries, partly across the wing. On the secondaries is a submarginal row of large orange and yellow spots and inside this are indications of another band. Eyes, brown. Antennæ, feet, and body, dusky, the last spotted beneath with yellowish.

Larva. Brown, with two rows of reddish tubercles on the sides. On the first segment, are two long processes of moderate length below,

Pupa. Grayish-violet in color, yellowish on the back, with the head square.

DIMENSIONS.

Spread of wings, from 3.55 to 3.80. Size of primaries, from 1.67 by .90 to 1.85 by .95. Size of secondaries, from 1.55 by .89 to 1.67 by .90. Length of antennæ, from .69 to .68. Length of body, from .50 to .60.

OBSERVATIONS.

Known by the short tails, brilliant, greenish, upper surface, and large, bright orange spot on the secondaries below. Southern States, rare in New England.

HABITS.

This species, although common in the south where it first appears in May, is rare in Massachusetts and does not occur north of this point.

68. PAPILIO TROILUS.

Green-spotted Swallow-tail.

DESCRIPTION.

SP. CH. *Size, medium. Primaries, rather short and rounded. Tails of secondaries, short and enlarged terminally.*

COLOR. Above. Dark brown, with an interrupted fringe of whitish. The secondaries are overwashed in a wide band

across the middle with greenish. There is a submarginal band of oval spots of greenish on primaries, and one of crescents on the secondaries, the uppermost and lowermost of which on the latter named wing, have an orange center. Partly crossing the primaries from the lower border, is a second band of indistinct spots of greenish.

Beneath. Similar to above, but with violet and greenish reflections. The spottings on the primaries above are repeated, but the first row is smaller and not as extended, while those of the second row are enlarged. The first row on the secondaries are smaller, more irregular in form, and orange in color, while in the second row, the spots are larger, black-lined outwardly and greenish inwardly, and between these bands is an overwashing of metallic green. Body, feet, and antennæ, dark brown, the first spotted with white below. Eyes, brown.

Larva. About 1.50 long, green in color, with a yellow marginal band, and two series of blue spots on the sides. On the third segment is a reddish spot with a deep blue center, on the fourth segment are two reddish spots, and at the base of the feet is a series of seven blue points. Food, sassafras leaves and leaves of other laurels.

DIMENSIONS.

Spread of wings, from 3.80 to 4.20. Size of primaries, from 2.00 by 1.05 to 2.10 by 1.20. Size of secondaries, from 1.90 by 1.00 to 2.51 by 1.05. Length of antennæ, from .65 to .70. Length of body, from 1.15 to 1.25.

OBSERVATIONS.

Specimens vary in the amount of orange in the upper and lower spots on the upper portion of the secondaries, sometimes this being almost wholly orange. Known from the closely allied *P. asterias*, by the lowermost spot on the secondaries being without a black center. Common in Massachusetts and southward.

HABITS.

This fine Butterfly occurs not uncommonly with us in Massachusetts in June and July. The larvæ feed most commonly on the sassafras, and spin a little roof over the leaf, drawing the edges together. They moult four times in one month, then enter the pupa state. There are two broods in a season, and the pupa of those hatched in August and September remain in this state throughout the winter.

69. PAPILIO CRESPHONTES.

Yellow-banded Swallow-tail.

DESCRIPTION.

Sr. Ch. Size, very large. Primaries, long but rounded at apex. Tails of secondaries, enlarged gradually.

Color. Male. Dark brown, with an interrupted fringe of yellow. There is an oblique band of yellowish spots from apex of primaries to inner portion of lower border, and a transverse band of similar ones near the outer border. Secondaries, with a band of yellow spots crossing the middle of the wing, and a broad yellow band crosses the base. At the inner angle of the secondaries, is an orange spot, and above it a curved line of blue.

Beneath. Primaries, brown, fringed as above. There is a submarginal band of large yellow spots, and inside this, is a row of larger ones, while the central cell is overwashed with yellowish. There is a submarginal row of large yellow spots on the secondaries, followed by a band of bluish, and outside the closed portion of the central cell are three orange spots, and the entire base of the wings is yellow. The center of the tails above and below are yellow. The orange spot of the upper surface of the inner angle of the secondaries is repeated below. Thorax and head, brown above. Abdomen and entire lower surface of body, yellow. Antennæ, black. Feet, dusky. Eyes, brown.

Female. Similar, but with the spots above much larger and more orange yellow.

Larva. Brown, mottled irregularly with whitish, spotted with brown.

Pupa. Brown, marked with blackish points. Food, in the South, orange leaves.

DIMENSIONS.

Spread of wings, from 5.37 to 5.50. Size of primaries, from 2.60 by 1.35 to 2.70 by 1.40. Size of secondaries, from 2.55 by 1.25 to 2.60 by 1.30. Length of antennæ, from .70 to .75. Length of body, from 1.30 to 1.35.

OBSERVATIONS.

Specimens vary somewhat in the size of spottings above, but may be known at once by the large size, dark, yellow-banded surface above and preponderance of yellow below. Occurs south; rare in Massachusetts.

HABITS.

I have found this fine Butterfly common in Florida in April, where they frequent the piney woods and feed upon the flowers of the various species of thistles and milk weeds. In flight they are quite swift, moving in a straight line, but never high. They are rare in New England, but several have been taken as far north as Massachusetts, and Mr A. M. Davenport informs me that he has reared the perfect insect from larvæ which he found in Watertown.

70. PAPILIO TURNUS.

Yellow Swallow-tail.

DESCRIPTION.

Gr. Ch. Size, medium. Primaries, not long and rather pointed. Tails of secondaries, slightly enlarged terminally.

COLOR. Above. Pale lemon-yellow, bordered with black, with an interrupted fringe of yellow and containing a series of yellow spots. Three short bands of black, starting from the upper border of primaries, which are margined with black, and one near the base which crosses the wing. The inner border of the secondaries is black and a narrow band crossing the wing obliquely, and there is a short bar across the closed end of the central cell. There is an orange spot on the upper and lower border of the black band, and above each is a curved line of bluish.

Beneath. Similar, but paler. The black markings are similar, but the border is overwashed with yellowish on the primaries, and with bluish on the secondaries. The spots in it are enlarged and those on the secondaries have orange centers. Inside these is a band of metallic blue. Tails, black. Body, black above, yellow below, with the thorax having two stripes of yellow. Feet and antennæ, black. Eyes, brown.

Larva. 1.50 long, cylindrical, with the forward segment enlarged. Color, deep green, paler beneath. The first edge of the second segment and the edge of the fifth is yellow, and the front edge of the sixth is velvety black, while on the first segment is a yellow, black-pupiled eye spot. **Pupa,** dull brown. Food, leaves of apple, plum, wild and cultivated cherry, thorn and bass wood.

DIMENSIONS.

Spread of wings, from 4.30 to 3.80. Size of primaries, from 1.85 by 1.10 to 2.15 by 1.05. Size of secondaries, from 2.10 by .90 to 2.20 by 1.25. Length of antennæ, from .60 to .65. Length of body, from 1.10 to 1.20.

OBSERVATIONS.

Somewhat variable in color, but recognized at once by the yellow color and black border. Occurs throughout New England.

HABITS.

This species occurs in June, often in great numbers, especially in Northern New England. They are fond of gathering about the muddy places in roads to sip the moisture from the soil, and I have seen dozens thus engaged in the space of a square yard; while thus occupied, they may be easily captured. They are good flyers and may be seen coursing rapidly over the bushes or across fields, moving with a steady, straight-forward flight.

71. PAPILIO ASTERIAS.

Black Swallow-tail Butterfly.

DESCRIPTION.

COLOR. Male. Above. Black, with an interrupted fringe of yellow, and two rows of yellow spots crossing the primaries and one or two other spots inside these, near the apex of the wing. There are two rows of yellow spots crossing the secondaries, and below there is a wide band of bluish. Spot on inner angle of secondaries, orange above, yellow below, with a black center. Tails, black.

Beneath. Similar, but paler and the spots are enlarged, while those on the secondaries are orange. The innermost row being bordered with black beneath and greenish above. The spot on inner angle is repeated.

Female. Similar, but with only one row of spots crossing the primaries above.

Larva. 1.50 long, cylindrical in form, bright green, lighter beneath with a transverse, black band on each segment, with a row of yellow spots on each. Body, black, with three rows of spots on each side.

Pupa. 1.25 long, pale green, yellow or ashy in color, with an ear-like projection above the head, and there is a small projection on the upper part of the back. Food plants, carrots, parsnips, celery, carroway, etc.

DIMENSIONS.

Spread of wings, from 3.05 to 4.10. Size of primaries, from 1.90 by .95 to 2.10 by 1.10. Size of secondaries, from 1.90 by .90 to 2.00 by .90. Length of antennæ, from .65 to .70. Length of body, from 1.00 to 1.15.

OBSERVATIONS.

Known at once by the dark colors, and distinguished from the closely allied *P. troilus* by the black center in the orange spot on the inner angle of the secondaries. Common throughout New England.

HABITS.

The Black Swallow-tail is one of our most common and best known species and the first brood makes its appearance early in June. The larvæ feed upon parsnips, carrots, and allied garden vegetables and often do considerable damage. The Butterflies are fond of sipping the sweet nectar from the flowers of the red clover, and when feeding keep the wings in constant, tremulous motion; then they are so eager in their quest that they may be easily captured.

FAMILY VIII. HESPERIDÆ. SKIPPERS.

Primaries, long and narrow. Secondaries, small. Body, large, with the head wide. Antennæ, short with the club terminating in a point-like projection. Central cell, open.

The point-like termination of the club of antennæ is often bent backward and downward into the form of a hook. The secondaries are usually rounded, but are occasionally tailed, and when the insects are in repose are held horizontal with the body, but the primaries are elevated.

GENUS I. EUDAMUS. TAILED SKIPPERS.

GEN. CH. *Primaries, long and narrow. Secondaries, tailed. Process on club of antennæ, hooked.*

The tails on the secondaries are often short but are sometimes very long. Colors, dark, with conspicuous spots on the primaries. The upper border of the primaries on the basal half, is furnished with a thin projection, in the males, which folds backward, otherwise sexes similar.

72. EUDAMUS PROTEUS.

Long-tailed Skipper.

DESCRIPTION.

SP. CH. Size, large. Tails of secondaries, more than half the length of the wing.

COLOR. *Above.* Dark smoky brown, fringed with whitish on the secondaries and these are covered with hairs on the basal half which show a dark greenish iridescence. Primaries, with twelve, nearly transparent, pale brown spots, arranged in the form of a triangle.

Beneath. Paler brown, with the light markings as above. A submarginal band of darker crosses the primaries, and three dark brown bars cross the secondaries, the outer of which includes the long tails, and between the two inner bars near the upper border is a brown spot. Body, dusky above, lighter below. Palpi, whitish below, brown above. Eyes, feet, and antennæ, brown.

DIMENSIONS.

Spread of wings, from 1.75 to 1.65. Size of primaries, from .83 by .45 to .90 by .48. Size of secondaries, from 1.12 by .43 to 1.15 by .46. Length of antennæ, from .70 to .75. Length of body, from .40 to .45.

OBSERVATIONS.

Known at once by the long tails and light markings on primaries. Occurs throughout the South; rare in southern New England.

HABITS.

This swiftly flying, restless Skipper occurs in Key West all winter and further north in Florida until late in the fall, then appears again in early March. It is extremely rare in New England.

73. EUDAMUS TITYRUS.

Silver-spotted Skipper.

DESCRIPTION.

SP. CH. Size, large; tails of secondaries, very short. Body and base of wings, hairy.

COLOR. *Above.* Reddish brown, fringed with lighter. There is a line of semi-transparent spots crossing the primaries, outside of which, below the central cell, is a smaller spot, and in the apex are three spots of a lighter color.

Beneath. Darker brown overwashed on outer edges of wings with whitish. Spottings of the primaries, similar. In the center of the primaries is a large silvery white spot. Body, antennæ, and feet, brown.

Larva. 2.00 long, cylindrical, with a very large head, roughened with small tubercles. Pale green, streaked with darker, neck and head, red, with two yellow spots on each side of the mouth.

Pupa. About 1.00 long, spindle-shaped, with head black. Food, locust leaves.

DIMENSIONS.

Spread of wings, from 2.20 to 2.50. Size of primaries, from 1.00 by .50 to 1.10 by .55. Size of secondaries, from .80 by .65 to .85 by .70. Length of antennæ, from .40 to .45. Length of body, from .75 to .80.

OBSERVATIONS.

Known by the large size, reddish spots on the primaries and silver spot on the secondaries. Occurs throughout southern and middle New England, southward and westward.

HABITS.

This large rapidly moving Skipper may be found in Massachusetts from the middle of

June until the tenth of July. The larvæ live upon the leaves of the wild and cultivated locust, and by drawin the edge of the leaf over, furnish a domicile for themselves, each insect, however, being provided with a habitation of its own.

74. EUDAMUS LYCIDAS.

Glaucous-winged Skipper.

DESCRIPTION.

SP. CH. Size, medium. Tails of secondaries, very short.

COLOR. *Above.* Reddish-brown, with an interrupted fringe of lighter. There are six semi-transparent, reddish spots near the middle of the primaries, the central large, one, the outer, medium, and three, two upper and one lower, small; and in the apex of the primaries are three minute reddish dots.

Beneath. On primaries similar, but ringed with darker. Secondaries, very dark becoming hoary on the outer border, being nearly white centrally. Body, antennæ, and feet, brown.

DIMENSIONS.

Spread of wings, from 1.50 to 2.00. Size of primaries, from .85 by .50 to .90 by .55. Size of secondaries, from .75 by .50 to .80 by .55. Length of antennæ, from .45 to .50. Length of body, from .80 to .85.

OBSERVATIONS.

Known from the preceding species by the smaller size, absence of silvery spot in the center of the secondaries, and presence of the hoary outer border. Occurs south and west, rare in southern New England and western Massachusetts.

HABITS.

This is an exceedingly rare insect in New England, and I do not remember having seen it living anywhere, but judge that it has similar habits to those of allied species.

75. EUDAMUS BATHYLLUS.

White-spotted Tailed Skipper.

DESCRIPTION.

SP. CH. Size, small. Tails of primaries, reduced to mere projections.

COLOR. *Above.* Smoky brown. Primaries, with an irregular band of six spots crossing them obliquely to the lower cell, and a prominent, triangular spot near the apex, all white.

Beneath. Similar, with violet reflections, darker at the base and with white markings of the primaries similar, but the secondaries are banded with darker.

DIMENSIONS.

Spread of wings, from 1.50 to 1.80. Size of primaries, from .70 by .55 to .75 by .60. Size of secondaries, from .55 by .50 to .65 by .55. Length of antennæ, from .35 to .40. Length of body, from .55 to .60.

OBSERVATIONS.

Known from all of the dark Skippers by the continuous, nearly confluent, series of white spots on the primaries; all other species have their spottings more isolated. This is not the *bathyllus* of Harris, the following species being the one described by him under this name.

HABITS.

This is a rare Skipper in Massachusetts only occurring, at least at all commonly, in the western portion of the State. It has similar habits to those of the following species.

76. EUDAMUS PYLADES.

Dark-brown Tailed Skipper.

DESCRIPTION.

SP. CH. Size, small. Tails of secondaries, reduced to mere protuberances.

COLOR. *Above.* Dark blackish-brown, abruptly banded with lighter on outer portion of secondaries. Near the apex of the primaries, are three small spots of white, and near the center of the upper border are three more, but smaller. Between these last, near the middle of the wing, is a narrow streak, and beneath this, a little nearer the outer border, is a small dot.

Beneath. Similar, but bordered with lighter; the spots on the primaries are more distinct, and there are two small ones within the lower ones. Secondaries, crossed by two bands of dark brown. Body, feet, and eyes, brown. Antennæ, brown above, lighter beneath.

Larvæ. Similar to that of *E. tityrus*, but smaller. Food plant, clover.

DIMENSIONS.

Spread of wings, from 1.35 to 1.60. Size of primaries, from .65 by .40 to .70 by .45. Size of secondaries, from .55 by .45 to .60 by .50. Length of antennæ, from .35 to .40. Length of body, from .65 to .70.

OBSERVATIONS.

Known from the preceding, by the small size and isolation of the eight spots on the primaries, and from all others of the dark Skippers, by the decidedly hooked antennæ and unmarked upper surface. This is the *E. bathylus* of Harris. Habitat, throughout New England.

HABITS.

This is a very common species in Massachusetts, being found on flowers in June and July, and although a restless species, may be easily captured.

GENUS II. THANAOS. BANDED SKIPPERS.

GEN. CH. *Primaries, not long and rounded. Secondaries, rounded and with tails. Club of antennæ, curved, not decidedly hooked. Palpi, hairy.*

Members of this genus are of medium size, dark in color, more or less prominently banded above with dusky.

77. THANAOS PERSIUS.

Six Spotted Banded Skipper.

DESCRIPTION.

SP. CH. Size, medium. Inner portion of secondaries, quite hairy.

COLOR. *Above.* Smoky brown, banded with a narrow line of dusky, within which, on the primaries, are four bands of dusky, the spots in the first being more isolated, and in the lowest, more confluent. On the secondaries, is a submarginal band of isolated spots. There is a series of four white spots near the apex of primaries, one spot nearer the base of the wing, in a line with the lowest, and one directly beneath the four, but near the middle of the outer border.

Beneath. Similar, but more reddish and with violet reflections, and the spots on the primaries are larger. Body, antennæ, eyes, and feet, brown. The larvæ feed upon the willow and poplar.

DIMENSIONS.

Spread of wings, from 1.40 to 1.50. Size of primaries, from .60 by .37 to .65. by .42. Size of secondaries, from .50 by .40 to .55 by .42. Length of antennæ, from .25 to .30. Length of body, from .60 to .65.

OBSERVATIONS.

Known by the dark banded primaries with the six white spots. Occurs throughout New England, excepting far north.

HABITS.

This Skipper is not uncommon from the middle of May through June, and like the allied species, frequents flowers along the road-sides and in the fields.

78. THANAOS LUCILIUS.

Five Spotted Banded Skipper.

DESCRIPTION.

SP. CH. Size, small. Inner portion of secondaries, not especially hairy.

COLOR. *Above.* Primaries, reddish-brown, banded with a narrow line of dark brown, with three bands of dark brown spots, the outer of which has the spots more isolated. Secondaries, dark brown, with a submarginal band of reddish spots, and inside this, is an irregular band of spots, also reddish. Apex of primaries, with four minute spots of white, the first and third being slightly nearer the base than the other two; beneath this, near the middle of wing, is a fifth dot of white.

Beneath. Reddish brown, with the white spots on the primaries, less distinct. Two bands of reddish spots cross both wings, near the outer border, the outer being smaller. Body, feet, eyes, and antennæ, brown.

DIMENSIONS.

Spread of wings, from 1.30 to 1.40. Size of primaries, from .60 by .35 to .65 by .40. Size of secondaries, from .50 by .40 to .55 by .45. Length of antennæ, from .25 to .30. Length of body, from .50 to .55.

OBSERVATIONS.

Known by the small size, banded wings above, distinct reddish spots beneath, and five white dots on the primaries. Not very common in Massachusetts and southward.

HABITS.

This little Skipper occurs in Massachusetts in July, but is not very common, and like other members of this genus, frequents flowers by the road-sides and in fields.

79. THANAOS ICELUS.

Small Bluish-banded Skipper.

DESCRIPTION.

SP. CH. Inner portion of the wing not hairy.

COLOR. *Above.* Reddish-brown, bluish on the outer portion of the primaries. There is a dark bordering line on

both wings. There is a series of light and dark spots, followed by two black edged bands of bluish, and there are two rows of reddish spots crossing the secondaries, and a spot in the middle of the wing also reddish.

Beneath. Reddish-brown, with two rows of reddish spots crossing both wings near the outer border, the outer of which is rather smaller. Antennæ, body, and feet, brown.

DIMENSIONS.

Spread of wings, from 1.15 to 1.25. Size of primaries, from .55 by .30 to .60 by .35. Size of secondaries, from .50 by .45 to .55 by .60. Length of antennæ, from .25 to .28. Length of body, from .55 to .60.

OBSERVATIONS.

The only substantial difference which I can find between this species and *T. brizo* is the smaller size, the spread of *icetus* being always less than 1.35 and the primaries less than .65 long. Known from all others by the bluish color to the bandings above.

HABITS.

This small Skipper is not uncommon throughout New England in June and July. It appears to have no characteristic habits, and the larvæ remain unknown.

80. THANAOS BRIZO.

Large Bluish-winged Skipper.

DESCRIPTION.

SP. CH. Size, large. Inner portion of wings, slightly hairy.

COLOR. *Above.* Primaries, reddish-brown, overwashed with slaty on the outer portion. There is a dusky border line, and then a yellowish and black series of spots, while two wide, slaty, black bordered bands cross the wing. Secondaries, also banded with dusky, inside of which are two bands of reddish spots and in the center of the wing is a spot also pale reddish.

Beneath. Reddish brown, lighter externally, with three bands of light reddish spots on the primaries and two on the secondaries. Body, feet, antennæ, and eyes, brown.

DIMENSIONS.

Spread of wings, from 1.40 to 1.70. Size of primaries, from .70 by .35 to .75 by .40. Size of secondaries, from .60 by .50 to .65 by .55. Length of antennæ, from .30 to .33. Length of body, from .60 to .65.

OBSERVATIONS.

Known from *T. icetus* by the large size and from all others by the bluish bands and absence of white dots on the primaries. Common throughout New England.

HABITS.

This is a very common species with us in Massachusetts, but is more rare north. It frequents the flowers by the roadside in June and July. The larvæ feed upon oak and beggar's lice and resemble those of *T. juvenalis*.

81. THANAOS MARTIALIS.

Dark-banded Skipper.

DESCRIPTION.

SP. CH. Size, medium. Inner border of wings, hairy.

COLOR. *Above.* Reddish-brown, rather paler on secondaries, with a dark border line, inside of which is a series of very dark spots on both wings, and within this is a second band. In this band, on the primaries, near the upper border are four whitish spots, and below them one isolated spot, also whitish, then follows a third dark band, and outside this, is a white spot. The base of both wings is dusky.

Beneath. Similar, but there are only two dark bands on the primaries, the whole base being dark brown, while the white spots appear as above. Body, feet, eyes, and antennæ, brown.

DIMENSIONS.

Spread of wings, from 1.40 to 1.50. Size of primaries, from .60 by .31 to .65 by .42. Size of secondaries, from .50 by .40 to .55 by .42. Length of antennæ, from .25 to .30. Length of body, from .60 to .65.

OBSERVATIONS.

Known from the closely allied *juvenalis*, by the dark bands and five instead of seven small spots in the outer border of the primaries. Occurs in New England, from Massachusetts southward.

HABITS.

This dark colored Skipper occurs in Massachusetts in July, but is not very common, and resembles allied species in habit.

ANCYLOXYPHA NUMITOR.

82. THANAOS JUVENALIS.
Seven Spotted Banded Skipper.

DESCRIPTION.

Sp. Ch. Size, medium. Inner border of wings, hairy.

COLOR. Above. Reddish-brown, with a dark border line, inside of which is a series of dark spots, and within this, is a second band. In this band, on the primaries, near the upper border, are four white spots, and below them, two isolated spots, also white, then follows a third dark band, and outside this, is a white spot. The base of both wings is dusky.

Beneath. Similar, but there are only two dark bands on the primaries, the whole base being dark brown, while the white spots appear as above. Body, feet, eyes, and antennæ, brown.

Larva. Green with stripes of paler. Pupa, long and tapering, brown or green in color.

DIMENSIONS.

Spread of wings, from 1.35 to 1.55. Size of primaries, from .65 by .35 to .75 by .40. Size of secondaries, from .52 by .48 to .62 by .50. Length of antennæ, from .28 to .35. Length of body, from .55 to .70.

OBSERVATIONS.

Known by the large size, distinct black bands on the wings above, with the seven white spots on the primaries. Common in southern and middle New England.

HABITS.

This is one of our best known Skippers, appearing in great numbers in July, frequenting roads in woodlands. They are fond of alighting in sunny places on the ground, but are constantly on the alert, instantly flying when approached too closely. The pupa is inclosed in a chrysalis of leaves and stubble, and spends the winter in this state.

GENUS III. PHOLISORA. BLACK SKIPPERS.

GEN. CH. *Primaries, short and well rounded. Secondaries, rounded. Club of antennæ, slightly bent and the terminal protuberance is very small. Palpi, not hairy, close and pointed.*

This genus contains but one species which occurs with us, and this is very dark in color.

83. PHOLISORA CATULLUS.

White Dotted Black Skipper.

DESCRIPTION.

Sp. Ch. Size, medium. Antennæ, prolonged into a point, not hairy.

COLOR. Above. Very dark brown or blackish. There is a submarginal series of whitish spots on the primaries, inside of which, near the apex, are five minute, white dots.

Beneath. Lighter, with the white dots larger, especially the upper. Body, antennæ, eyes, palpi, and feet, brown. The head is minutely spotted with white above, and the palpi and inner margin of the four legs are white.

DIMENSIONS.

Spread of wings, from 1.10 to 1.20. Size of primaries, from .55 by .35 to .60 by .40. Size of secondaries from .45 by .35 to .48 by .37. Length of .25 to .30. Length of body .50 to .55.

OBSERVATIONS.

Known by the black colors, white dots on the secondaries and on the top of the head and a white face. Occurs in southern and western Massachusetts.

HABITS.

I have never met with this species while living, and the one that I have described, was taken by Mr. F. H. Sprague, in West Springfield, Mass., August 9, 1883. I do not think it occurs at all commonly in New England.

GENUS IV. ANCYLOXYPHA. MARGINED SKIPPERS.

GEN. CH. *Primaries, very narrow and rounded terminally. Secondaries, also narrow and rounded. Body, long. Antennæ, short, with the terminal process of the club very minute and straight. Palpi, short.*

This species is remarkable on account of the long, straight club of the antennæ, with its minute, uncurved point.

84. ANCYLOXYPHA NUMITOR.

Bordered Skipper.

DESCRIPTION.

Sp. Ch. Size, very small. Legs, long and spurred. Eyes, prominent.

COLOR. Above. Reddish-brown, margined with lighter, with the center of primaries, dusky orange, and the center of secondaries clear orange yellow.

Beneath. The primaries are dark brown with the upper and outer margin, orange. Secondaries, clear yellowish-orange unmarked. Body, dusky above, orange on the sides and white below. Feet, whitish. Eyes and antennæ, brown.

PLATE VIII.



EXPLANATION OF FIGURES ON PLATE VIII.

95. *Pamphila leonardus*, Leonard's Skipper, male, upper side; 95a lower side of same; 95b, female, upper side.

100. *Pamphila bimacula*, Two-spotted Skipper, male, upper side; 100a, lower side of same; 100b, female, upper side.

97. *Pamphila brettus*, Black-spotted Skipper, male, upper side; 97a, lower side of same.

96. *Pamphila peckius*, Peck's Skipper, male, upper side; 96a, the lower side of the same.

98. *Pamphila otho*, Yellowish-brown Skipper, male, upper side; 98a, lower side of same; 98b, female, lower side.

99. *Pamphila mystic*, Orange Skipper, male, upper side; 99a, the lower side of same; 99b, female, upper side.

101. *Pamphila manataqua*, Yellow-spotted Brown Skipper, male, upper side; 101a, lower side of same; 101b, female, upper side.

103. *Pamphila metacomet*, Immaculate Skipper, male, upper side; 103a, lower side of same; 103b, female, lower side.

104. *Pamphila verna*, Spotted Brown Skipper, male, upper side; 104a, lower side of same.

105. *Pamphila accius*, White-spotted Brown Skipper, male, upper side; 105a, lower side of same.

106. *Pamphila hiana*, Four-spotted Brown Skipper, male, upper side; 106a, lower side of same.

94. *Pamphila huron*, Velvet-spotted Skipper, male, upper side; 94a, lower side of same.

85. *Carterocephalus mandan*, Small Black Skipper, male, upper side; 85a, lower side of same.

81. *Thanaos martialis*, Dark-banded Skipper, male, upper side; 81a, lower side of same.

66. *Anthocaris genutia*, White Orange-spotted Butterfly, male, upper side; 66a, lower side of same.

58. *Colias laurentina*, as this species is probably the same as *C. pelidne* it is not figured separately.

56. *Colias pelidne*, Cape Breton Butterfly, female, upper side; 56a, lower side of same.

47. *Thecla laeta*, Blue Streaked Butterfly, male, upper side; 47a, the lower side of same.

37. *Thecla ontario*, Ontario Streaked Butterfly, male, upper side; 37a, lower side of same.

61. *Terias delia*, Yellow-banded Butterfly, male, upper side; 61a, the lower side of same.

36. *Libythea bachmani*, Red and Black Beaked Butterfly, male, upper side; 36a, lower side of same.

107. Figure illustrating different parts of a Butterfly; cc, central cell in both wings; P, Primaries; S, Secondaries; 4d, dotted line along which the length of the primaries is measured; wp, width of primaries; ls, length of secondaries; wa, width of secondaries; u, upper vein of primaries; wb, branches of upper vein of primaries; m, middle vein of primaries; 1, upper, 2, middle, and 3, lower branch of same; l, lower vein of primaries; 1 v, upper, 2 v, middle, 3 v, lower and 4, upper median veins of same; a, abdomen; h, posterior legs; f, middle legs; d, short front legs folded; sp, spurs of tarsus; b, body; a, antennae; s, shaft of same; c, club; up, upper border of primaries; aa, apex; op, outer border of same; os, outer border of secondaries; v, lower border of same.

BUTTERFLIES OF NEW ENGLAND.

Pupa. According to Harris, is long, cylindrical, tapering toward the hinder extremity, reddish-ash, minutely sprinkled with fine dots.

DIMENSIONS.

Spread of wings, from 1.00 to 1.10. Size of primaries, from .45 by .25 to .48 by .28. Size of secondaries, from .35 by .25 to .38 by .28. Length of antennæ, from .20 to .22. Length of body, from .45 to .50.

OBSERVATIONS.

Known at once by the small size, straight antennæ and yellow, brown-bordered wings above. Occurs commonly in Massachusetts and throughout southern New England. Rare in Maine.

HABITS.

I have always found this species very abundant in the tall grass which skirts water courses, and they continue to fly from the first of July until late in August. They are very sluggish in movement, seldom occurring out of the herbage among which they move. When alarmed they will drop to the ground among the grass stems and then remain quiet.

GENUS V. CARTEROCEPHALUS. PIGMY SKIPPERS.

GEN. CH. *Primaries, short and rounded. Antennæ, short, with the club large and the terminal process is long and bent downward.*

Members of this genus are small and dark in color with short, well rounded secondaries.

85. CARTEROCEPHALUS MANDAN.

Small Black Skipper.

DESCRIPTION.

SP. CH. Size, small. Wings, not hairy on inner border.

COLOR. *Above.* Dark brown, nearly black, fringed with lighter. There is a submarginal row of dull orange spots on the primaries, which is more or less indistinct and another row more distinct inside of this. The central cell is more or less filled with orange scales, and there is a small spot directly under it in the middle. The secondaries have three rows of orange spots.

Beneath. More yellowish, with spots on the primaries larger and not isolated. Spottings on secondaries larger than above, and nearly white.

DIMENSIONS.

Spread of wings, from 1.20 to 1.25. Size of primaries, from .55 by .35 to .60 by .40. Size of secondaries, from .45 by .35 to .50 by .38. Length of antennæ, from .22 to .25. Length of body, from .50 to .55.

OBSERVATIONS.

Known at once by the dark color and three rows of spots on the secondaries. Rare throughout New England.

HABITS.

I have never met with this Skipper living as it occurs with us very rarely, but appears to be generally distributed, for it has been recorded as far north as Maine.

GENUS VI. AMBLYSIRTES. LITTLE BROWN SKIPPERS.

GEN. CH. *Size, small. Primaries, short and rather angled terminally. Secondaries, rounded. Antennæ, long, the terminal process of the club is long and bent outward at right angles.*

Members of this genus are of small size and dark in color, with white spottings. The point of the angle of the primaries is about in the middle of the wing.

86. AMBLYSIRTES VIALIS.

Two Spotted Brown Skipper.

DESCRIPTION.

SP. CH. Size, small. Inner border of wing, not hairy. Club of antennæ, straight.

COLOR. Dark brown throughout, more purplish below, with two white dots near the apex of the primaries.

DIMENSIONS.

Spread of wings, from .80 to 1.00. Size of primaries, from .45 by .25 to .48 by .28. Size of secondaries, from .37 by .25 to .39 by .37. Length of antennæ, from .25 to .27. Length of body, from .50 to .53.

OBSERVATIONS.

Known at once by the small size, uniform dark color, and two spots on the upper margin of the primaries. Occasionally there is a third spot near the middle of the outer portion of the wing.

HABITS.

This species occurs throughout New England but is not common anywhere, and is very rare in Massachusetts.

87. AMBLYSCIRTES SAMOSET.

Yellow-fringed Brown Skipper.

DESCRIPTION.

SP. CH. Size, medium. Inner border of wings, hairy. Club of antennæ, straight.

COLOR. *Above.* Dark brown, an interrupted fringe of yellowish. There are four spots on the apex of the wing, the upper a trifle nearer the base than the others, and below these nearer the base is another spot, all yellowish.

Beneath. Dark brown, fringed as above, overwashed on the secondaries and apex of primaries with whitish. The outer and lower portions of the primaries are reddish. The spots in the apex are white and larger, and there is one between them and the tips of the wing, and inside them in the center of the wing are two spots of yellowish with two more below these nearer the outer border. Secondaries spotted with darker at the base. Body, antennæ, and palpi, brown above, whitish below.

DIMENSIONS.

Spread of wings, from 1.00 to 1.10. Size of primaries, from .45 by .25 to .48 by .28. Size of secondaries, from .39 by .30 to .35 by .32. Length of antennæ, from .32 to .30. Length of body, from .55 to .48.

OBSERVATIONS.

Known by the small size, brown color, five yellowish spots above, and yellow fringe. Rare in New England.

HABITS.

This is an exceedingly rare Skipper in New England. The larvæ are said to feed on grasses, and the perfect insect occurs in July.

GENUS VII. PAMPHILA. ORANGE AND BROWN SKIPPERS.

GEN. CH. *Primaries, long and pointed, rather angled terminally. Antennæ, long, the terminal process of the club is long and bent outward at right angles.*

Body, large and stout. Palpi, short and slightly hairy. The secondaries of members of this genus, are short and medium. The colors are generally brown, marked with orange. We have nineteen species with us.

88. PAMPHILA METEA.

White-banded Skipper.

DESCRIPTION.

SP. CH. Size, medium. Primaries, rather short and rounded. Secondaries, square.

COLOR. *Male. Above.* Dark brown, fringed with lighter, with a dark marginal line. In the outer portion of upper border of primaries are three whitish elongated spots, and below these, but outside them, is an irregular band of spots which crosses the wing from this point. There is an indistinct submarginal band of whitish on the secondaries. There is an oblique, black dash in the center of the primaries.

Beneath. Purplish-brown, lighter externally, with a submarginal regular band of whitish crossing both wings. This bends outward in the central cell, and below, it is quite wide on the lower border of the primaries. Body, antennæ, eyes, and feet, brown. Female, without the black dash on the primaries above.

DIMENSIONS.

Spread of wings, from 1.20 to 1.25. Size of primaries, from .55 by .35 to .60 by .40. Size of secondaries, from .45 by .35 to .50 by .38. Length of antennæ, from .23 to .25. Length of body, from .50 to .55.

OBSERVATIONS.

Known by the predominating brown color and continuous whitish band crossing both wings below. Resembles *menataqua* and *pocahontas* somewhat, but neither of these have a white band on the secondaries below.

HABITS.

This is a rare species in Massachusetts and does not occur north of this point. The Butterfly may be found from the middle of May until late in June.

89. PAMPHILA MASSASOIT.

Yellow Cross Skipper.

DESCRIPTION.

SP. CH. Size, medium. Primaries, short and rather square. Secondaries, rounded.

COLOR. *Male. Above.* Dark brown, without any markings.

Beneath. Primaries, reddish brown, with three small, reddish dots near the outer portion of upper border, and a marginal band of reddish, widest above. Secondaries, dusky orange, with a large, yellow mark in the form of a cross, with arms bent downward, and the shaft resting on the base of the wing. Body, antennæ, feet, and eyes, brown.

Female. With the spots on the upper border of the primaries beneath, showing above, and three more below this, in the center of the wing, with a series of four more reddish spots on the secondaries. Below, those on the primaries, are absent, and one or two more. The cross on the secondaries is similar to that of the male.

DIMENSIONS.

Spread of wings, from 1.10 to 1.25. Size of primaries, from .50 by .35 to .60 by .37. Size of secondaries from .40 by .37 to .60 by .40. Length of antennæ, from .30 to .35. Length of body, from .55 to .65.

OBSERVATIONS.

Some males have a few orange spots above, but irregular and more or less indistinct. Known at once by the dark color and large, prominent, yellow cross on the secondaries below. Occurs in Massachusetts and southward.

HABITS.

This oddly marked Skipper is quite rare with us and occurs from June fifteenth until the last of July, frequenting flowers by the roadside.

90. PAMPHILA DELAWARE.

Yellow-winged Skipper.

DESCRIPTION.

SP. CH. Size, medium. Primaries, rather pointed. Secondaries, square.

COLOR. *Above.* Orange yellow, bordered all around and on the base of each wing with brown; veins, brown; longitudinal dash at base of wing and across central cell of primaries, black.

Beneath. Ochre-yellow; base, lower border, and short line at lower outer border, dusky. Secondaries, unmarked. Body and antennæ, brown above, whitish beneath; feet, yellow; eyes, brown.

DIMENSIONS.

Spread of wings, from 1.30 to 1.35. Size of primaries, from .60 by .35 to .63 by .38. Size of secondaries, from .45 by .39 to .48 by .35. Length of antennæ, from .25 to .28. Length of body, from .60 to .65.

OBSERVATIONS.

Resembles *zabulon* above, but this has no black dash at base of primaries and the secondaries beneath are not bordered. Known by the brown-bordered, orange-centered wings above and margined secondaries below. This is the *P. logan* of Edwards.

HABITS.

This is a rare species in New England, occurring only in western Massachusetts. Mr Sprague tells me that this Skipper is by far the shyest of the family, not permitting the collector to come within many yards of it, without taking alarm. It flies in July and August.

91. PAMPHILA PONTIAC.

Green-margined Skipper.

DESCRIPTION.

SP. CH. Size, medium. Primaries, pointed. Secondaries, rounded.

COLOR. *Male. Above.* Brown, fringed with paler. Three spots near the outer portion of upper border of primaries, two below this in center of wing, and one near the lower border of basal portion of the wing, and three spots in center of the secondaries, orange yellow. There is an oblique black dash across the center of the primaries. The secondaries are slightly overwashed with orange.

Beneath. On primaries similar, but without the black dash, and dusky at base, greenish on the outer border. Secondaries, greenish, with three lighter spots. Body, dusky above, lighter beneath. Eyes, brown. Feet, yellow. Antennæ, brown. Female, lacks the black dash above.

DIMENSIONS.

Spread of wings, from 1.25 to 1.35. Size of primaries, from .55 by .35 to .58 by .38. Size of secondaries, from .50 by .37 to .53 by .40. Length of antennæ, from .25 to .28. Length of body, from .60 to .65.

OBSERVATIONS.

Known by the dark brown upper surface of the secondaries, with the pale orange spots, preponderance of dark color on the primaries, and green under surface to the secondaries, with the three lighter spots.

HABITS.

This is quite a rare Skipper with us, and does not occur, I think, much north of Massachusetts.

92. PAMPHILA ZABULON.

Orange and Brown Skipper.

DESCRIPTION.

SP. CH. Primaries, rather short and rounded. Secondaries, rounded. Sexes, similar, males without the black dash.

COLOR. *Above.* Orange yellow, bordered on both wings all around, excepting on the upper margin of primaries, with brown. Veins brown. There is a narrow, black, oblique line across the central cell.

Beneath. Paler, the border is purplish-brown, with the base of primaries black, and one or two spots outside the border at the base of the secondaries, while the yellow in the center of the wing is paler. Body, antennae, and palpi, brown, lighter below. Eyes and feet, brown.

DIMENSIONS.

Spread of wings, from 1.30 to 1.35. Size of primaries, from .60 by .35 to .70 by .40. Size of secondaries, from .50 by .35 to .55 by .40. Length of antennae, from .27 to .35. Length of body, from .60 to .65.

OBSERVATIONS.

We have no other Skipper which has so much orange above, without any extended brown markings in the middle of the wings, excepting *P. delaware*, and in this, the under surface of the secondaries is without a dark border. The color described is the normal form, but there is a dark form in which the greater portion of both surfaces becomes brown, the orange markings are restricted to mere spottings above and below on both wings, and on the fore wings it becomes considerably paler. In this stage, specimens resemble *P. verna* somewhat, but may be distinguished by the indications of the peculiar markings, of the type, on the secondaries below, and a large patch of whitish in the lower portion of the under surface of the primaries. This is the *P. pocahontas* of Scudder, and the type form is *hobomok* of Harris.

HABITS.

The Brown and Orange Skipper is one of the most abundant species which we have with us, and it is found by roadsides in the vicinity of woodlands, in June and July.

93. PAMPHILA SASSACUS.

Pale-spotted Skipper.

DESCRIPTION.

Sr. Ch. Primaries, short and pointed. Secondaries, short and square.

COLOR. *Male. Above.* Brown, with a patch of orange across the center of the primaries, three square spots of paler orange on the upper border of outer portion, and two beneath outside these in the central cell, and an oblique, black dash in the middle of the wing. There is an irregular orange patch on center of secondaries.

Beneath. On primaries similar, but much paler, and with the brown markings indistinct, being overwashed with greenish. Secondaries, clear greenish, without dark bordering, with a zigzag band of pale square spots. Body, palpi, and antennae, dusky above, yellowish below. Feet, yellowish.

Female. Lacks the black dash on the primaries and is paler, otherwise similar to the males.

DIMENSIONS.

Spread of wings, from 1.00 to 1.25. Size of primaries, from .45 by .25 to .50 by .30. Size of secondaries, from .35 by .30 to .40 by .37. Length of antennae, from .25 to .27. Length of body, from .50 to .55.

OBSERVATIONS.

Known by the five square spots near the apex of primaries. Clear, unbordered, lower surface of secondaries, with the zigzag band of paler spots. Resembles *sabulon* and *delaware* somewhat, but neither of these have the five orange spots at apex of primaries and the latter has no paler markings in the clear secondaries, below. Common throughout New England.

HABITS.

This is one of the most common Skippers. Occurs in June on the margin of woodlands in company with other members of the family.

94. PAMPHILA HURON.

Velvet-spotted Skipper.

DESCRIPTION.

Sr. Ch. Size, medium. Primaries, long and pointed, with inner angle produced backward.

COLOR. *Male. Above.* Yellowish brown, fringed with orange, and there are five orange spots in the apex of primaries, three on the upper border, two in the central cell, and a patch across the middle of the wing, leaving the veins brown, orange, and in the middle of this, is an oblong patch, square externally, of velvety black outwardly, grayish in some lights, and grayish externally, surmounted above by a dash of black. Secondaries, orange in the center, between the veins.

Beneath. Nearly clear orange-yellow, with a narrow border line of darker, and the darker markings showing faintly, excepting the velvety patch which is absent. *Female.* Lacks the black dash over the velvety patch.

DIMENSIONS.

Spread of wings, from 1.25 to 1.35. Size of primaries, from .70 by .35 to .75 by .40. Size of secondaries, from .45 by .40 to .48 by .43. Length of antennae, from .25 to .30. Length of body, from .65 to .70.

OBSERVATIONS.

Resembles *P. leonardus* somewhat in form but lacks the bright, prominent markings of this species beneath. It more nearly resembles *brutus* in color, as this has the velvety spot on the primaries above, but in *Aurea*, this spot is larger square externally, not narrow and oblique as in that species, nor has it the prominent brown markings seen beneath in *brutus*. Known from all other Skippers by the velvety patch above. Occurs west, rare in New England.

HABITS.

The Velvet-spotted Skipper is very rare in Massachusetts but appears to be common throughout the West.

95. PAMPHILA LEONARDUS.

Leonard's Skipper.

DESCRIPTION.

SP. CH. Size, large. Primaries, long and pointed. Secondaries, large, with the inner angle produced backward somewhat. Club of antennæ, large, with the terminal process very small.

COLOR. Male. Above. Dark brown, fringed with lighter, with six spots in apex of primaries, three near upper border, two outside, three in central cell, and one below these, but inside them, orange; there is a continuous band, gradually widening to the lower border. The base of the wing is orange, this leaves a brown patch crossing the wing obliquely, and in it is a black dash. Secondaries, with an irregular patch of orange.

Beneath. Rich reddish-orange, while the dark border and the light markings of the primaries are repeated, but paler and more distinct and there is a curved band of whitish spots in the center of the secondaries, and a single, small spot inside this. Body, brown above, covered with reddish hairs, lighter orange beneath, and very hairy. Feet, orange. Eyes, brown.

Female. Similar, but lacks the black dash, and the orange markings above are more restricted, especially on the secondaries, and the brown is darker. Beneath quite similar to the male.

DIMENSIONS.

Spread of wings, from 1.30 to 1.50. Size of primaries, from .60 by .30 to .70 by .35. Size of secondaries from .40 by .35 to .45 by .38. Length of antennæ, from .30 to .33. Length of body, from .65 to .75.

OBSERVATIONS.

Known at once by the large size, rich reddish-orange color beneath, with the prominent light spottings. Occurs in New Hampshire and is rare in Massachusetts and southward.

HABITS.

This fine Skipper appears to be confined to a limited area with us. It is rare in eastern Massachusetts, not found in Maine, excepting in the northern portions, but is common in southern New Hampshire and it has been taken as far south as Connecticut. It occurs in July.

96. PAMPHILA PECKIUS.

Peck's Skipper.

DESCRIPTION.

SP. CH. Size, small. Primaries, rather short. Secondaries, short and rounded.

COLOR. Male. Above. Brown, fringed with lighter; base of primaries, orange. There are six spots in the border, outside this, three near the upper border, two in the central cell outside the line of those above, and one below these but inside, all orange. There is a decided dash of black in the center of the wing. Secondaries, with an orange patch in center.

Beneath. On primaries similar to above but paler, with a dusky patch on lower border of wing. Secondaries, reddish orange, with a large, irregular patch of light yellow in the center, in which is a brownish spot and two dots. Near the inner border, is a wedge shaped, depressed spot of dusky. Body, palpi, and antennæ, dusky above, yellowish beneath, eyes, brown.

Female. Similar, but the light markings above are more restricted, being confined on the primaries to the upper border of the base, and to a line of spots on the outer portion. Beneath, usually similar to the male.

Larva. Downy, brownish-yellow, dotted with black; lighter beneath.

DIMENSIONS.

Spread of wings, from 1.00 to 1.10. Size of primaries, from .50 by .25 to .62 by .27. Size of secondaries, from .30 by .28 to .35 by .30. Length of antennæ, from .25 to .27. Length of body, from .50 to .55.

OBSERVATIONS.

This species is quite variable in the size of the light markings, especially beneath, in some, more often in the females, the isolated spot of brown in the light patch is joined to a point above it, thus dividing the patch nearly in two parts. In some specimens, the light markings above are extended, and there is a spot inside the orange patch on the secondaries; this constitutes the *varians* of Harris. Known at once, however, by the small size, broken spottings above, and prominent light patch on the secondaries below. Common throughout New England.

HABITS.

This little Skipper is found commonly by the roadsides from the middle of June until the last of July. It has a swift flight, and like many members of the genus, alights readily and starts away as quickly as it came.

97. PAMPHILA BRETTUS.

Black-spotted Skipper.

DESCRIPTION.

SP. CH. Size, medium. Primaries, rather short, not especially pointed. Secondaries, rather square.

COLOR. Male. Above. Primaries, orange yellow, banded with brown. There is a brown patch in central cell, near the lower border, and below this inside it, is an oblique, oblong patch of silvery black. Secondaries, brown, with an orange, longitudinal patch in the center.

Beneath. Orange, with a submarginal band of spots, a second oblique band on the primaries, a spot on the base, a second band crossing the middle of the secondaries, and a large patch on the lower border, all these markings being black. Body, palpi, and antennae, dusky above, yellowish below. Eyes, brown.

Female. Similar, but with more brown above. Similar, below.

DIMENSIONS.

Spread of wings, from 1.15 to 1.20. Size of primaries, from .35 by .50 to .38 by .53. Size of secondaries, from .33 by .40 to .36 by .43. Length of antennae, from .25 to .27. Length of body, from .50 to .55.

OBSERVATIONS.

Known at once by the preponderance of yellow on the primaries above, with the large, velvety black patch on the center, but more especially by the two rows of black spots beneath as no other of the Skippers have these. Occurs throughout the south, rare in southern New England.

HABITS.

I have never seen this fine Skipper in New England, but it is quite common in Florida in early spring, and occurs rarely along our southern border.

98. PAMPHILA OTHO.

Yellowish-brown Skipper.

DESCRIPTION.

SP. CH. Size, medium. Primaries, long and pointed. Secondaries, short and rounded.

COLOR. Male. Above. Yellowish-brown above, with a double spot of yellowish near the apex of primaries, and one below this, near the middle of the submargin of the outer border. There is a small, grayish, velvety patch near the middle of the wing, with a black patch above and outside it, and another shorter one inside. Secondaries, unmarked.

Beneath. Similar but paler, with the spots seen above, more distinct, and there is an additional one in the apex of the primaries, with three or four under this, in the middle of the secondaries. Body, antennae, feet, and palpi above, brown, the last named, whitish below; eyes, brown.

Female. Similar, but with some yellowish spots on primaries, arranged in a triangle, three together, also two apart and below these, with two inside and above them. Beneath, the outer border of the wings is margined with bluish-white, and there are two spots on the primaries outside of the others. There are no spots on the secondaries.

DIMENSIONS.

Spread of wings, from 1.15 to 1.45. Size of primaries, from .50 by .30 to .65 by .35. Size of secondaries, from .40 by .30 to .50 by .35. Length of antennae, from .25 to .30. Length of body, from .50 to .60.

OBSERVATIONS.

The males may be known from other dark Skippers, by the divided black dash and three spots on the primaries above, and the females, by the unmarked secondaries, seven spots above, and brown border on primaries. Occurs throughout New England.

HABITS.

This is quite a rare species but appears to be generally distributed. I have specimens loaned me by Mr. F. H. Sprague, taken in June and July, at Wollaston, Mass.

99. PAMPHILA MYSTIC.

Orange Skipper.

DESCRIPTION.

SP. CH. Size, medium. Primaries, short and rather rounded. Secondaries, square.

COLOR. Male. Above. Brown, with a submarginal band of orange on the primaries, the base of the wing is orange and there is a black dash on the brown band between these two orange markings. There is a central, submarginal band of orange spots on the secondaries, with a spot within this.

Beneath. Deep orange-yellow, without the border, with the base of primaries, dusky, with an oblique, dusky band, while the orange markings seen above, are repeated, but very pale, and the orange spots seen above on the secondaries, are repeated, but are also paler. Body, antennae, and palpi, dusky above, yellowish beneath. Feet, yellowish. Eyes, brown.

Larva. 1.00 long, flattened in form; head, prominent, reddish-brown, and covered with hairs. Body, bluish green, downy, with a line down the back and numerous spots of a darker shade. Food, grasses.

Female. Similar, but lacks the black dash, is darker above and the base of the primaries is brown. Beneath, similar to the male, but the markings are more decided.

DIMENSIONS.

Spread of wings, from 1.10 to 1.25. Size of primaries, from .23 by .55 to .37 by .60. Size of secondaries, from .30 by .35 to .35 by .40. Length of antennæ, from .23 to .25. Length of body, from .55 to .60.

OBSERVATIONS.

This is the most orange of all the Skippers beneath, excepting *P. leonardus* which it resembles in markings, but *mystic* is smaller and the markings on the secondaries beneath are not as decided, and are yellow, not reddish as in the larger species.

HABITS.

This species is generally distributed throughout New England, but is not very common anywhere. Occurs from the middle of June through July.

100. PAMPHILA BIMACULA.

Two-spotted Skipper.

DESCRIPTION.

SP. CH. Primaries, rather pointed. Secondaries, square.

COLOR. *Male. Above.* Dark-brown, fringed with lighter, with a tawny yellow patch in the center of the primaries, in which is an oblique black dash.

Beneath. Paler and more reddish, lacks the black dash, and the markings seen above are repeated. Body, antennæ, and palpi, brown above, lighter beneath; eyes, brown.

Female. Similar, but lacks the black dash and accompanying tawny spot, and has two reddish spots near the middle of the primaries, and is more reddish below than the male.

DIMENSIONS.

Spread of wings, from 1.20 to 1.37. Size of primaries, from .60 by .35 to .65 by .37. Size of secondaries, from .40 by .35 to .50 by .38. Length of antennæ, from .25 to .28. Length of body, from .50 to .60.

OBSERVATIONS.

The males may be distinguished from the closely allied *P. metacomet*, by the tawny yellow spot on either side of the black dash, and the females, by the dark colors and two spots on primaries. Sometimes the females have two additional spots outside these, and this form is the *acanoetus* of Scudder.

HABITS.

This is an exceedingly rare species in Massachusetts, but occurs throughout New England, nowhere, however, very commonly. Specimens have been taken by Mr Sprague, at Wollaston, Mass., in July.

101. PAMPHILA MANATAAQUA.

Yellow-spotted Brown Skipper.

DESCRIPTION.

SP. CH. Size and general form as in the preceding species.

COLOR. *Male. Above.* Dark brown, with a brassy yellow spot in the center of the primaries in which is an oblique, black dash, and near the upper border are two small spots also yellow. The secondaries have three yellow spots in the center.

Beneath. Overwashed with orange. The spots above are repeated, lighter on the primaries, more orange on the secondaries. The outer border of the secondaries and lower border of primaries are lighter.

Female. Similar above, lacks the black dash and has four spots of yellow on the primaries, and no markings on either surfaces of the secondaries.

DIMENSIONS.

Spread of wings, from 1.15 to 1.25. Size of primaries, from .60 by .25 to .65 by .30. Size of secondaries from .40 by .35 to .45 by .38. Length of antennæ, from .25 to .27. Length of body, from .50 to .55.

OBSERVATIONS.

Known from the other brown Skippers by the decided brassy spot on the primaries and two yellow spots above this, and the three spots on the secondaries. The female resembles that of *metacomet*, but has the lower surface orange, not purplish as in that species. Known from the females of *cernes* by the absence of the yellow patch on the upper border of primaries. Rare in New England.

HABITS.

This species occurs in July and has similar habits to other members of the genus, but is rather rare with us.

102. PAMPHILA CERNES.

Clear-winged Skipper.

Sp. Ch. Size, small. Primaries, short and rounded. Secondaries, rounded.

Color. Male. Above. Yellowish-brown, with a large, orange-yellow spot on the upper border of the wing which is encroached upon in the middle of the outer portion, by a projection of brown. There is a black, oblique dash in the middle of the wing. Secondaries, unmarked.

Beneath. Paler, with markings on primaries similar and the base of the wing is black.

Female. Similar, lacks the black dash, the large, yellow spot on primaries is more restricted, and there are three spots of yellow outside it, and two more below these.

DIMENSIONS.

Spread of wings, from 1.05 to 1.00. Size of primaries, from .47 by .25 to .55 by .30. Size of secondaries, from .37 by .30 to .42 by .33. Length of antennæ, from .22 to .25. Length of body, from .45 to .50.

OBSERVATIONS.

In some male specimens, the yellow spot on the primaries is restricted much as in the female, leaving three isolated spots outside of it. This form is the *ahaton* of Harris. Known by the unmarked secondaries and large orange spot on the primaries. Common throughout New England.

HABITS.

This is a very common Skipper occurring in woodlands and along their borders in June and July, and like most members of this genus, are swiftly moving insects and quite shy.

103. PAMPHILA METACOMET.

Immaculate Skipper.

DESCRIPTION.

Sp. Ch. Size, medium. Primaries, pointed. Secondaries, rounded.

Color. Male. Dark brown throughout, fringed with lighter. Paler beneath, with bronzy reflections, and there is a black oblique dash across the middle of the primaries. Body, brown; antennæ and palpi, brown above, yellowish below; feet, yellowish.

Female. Similar, but with five yellowish spots on the outer portion of primaries. The secondaries are purplish below with an indistinct band of yellowish spots in the middle.

DIMENSIONS.

Spread of wings, from 1.15 to 1.25. Size of primaries, from .55 by .30 to .60 by .35. Size of secondaries, from .40 by .30 to .45 by .35. Length of antennæ, from .25 to .30. Length of body, from .50 to .55.

OBSERVATIONS.

Some females are nearly as unmarked as the males, the spottings being restricted to the lower portion of the primaries, and all gradations occur between these and the one described. Males may be distinguished by the uniform color and black dash, while the females may be known from the closely allied *manataqua*, by the decidedly purplish color to the lower side of the secondaries, this, in that species, being yellowish. Occurs throughout New England.

HABITS.

This Skipper occurs throughout New England but is far from common. It occurs from the middle of June until late in July.

104. PAMPHILA VERNA.

Spotted Brown Skipper.

DESCRIPTION.

Sp. Ch. Size and form as in the last species.

Color. Male. Above. Dark brown, with seven spots of whitish on the primaries, three near the outer, upper border, three outside the black, oblique dash and one just above it. Secondaries, unmarked above.

Beneath. Paler, with the spottings on the primaries more distinct and whiter, excepting the lowermost one which is depressed. There are faint indications of a line of spots across the secondaries. Body, antennæ, and palpi, brown above lighter below. Feet, yellowish. Eyes, brown.

Female. Similar, but with the light markings more extended.

DIMENSIONS.

Spread of wings, from 1.15 to 1.25. Size of primaries, from .40 by .52 to .43 by .55. Size of secondaries from .40 by .45 to .43 by .48. Length of antennæ, from .30 to .35. Length of body, from .50 to .60.

OBSERVATIONS.

Known from other brown Skippers by the four spots clustered about the black dash on the primaries. Occurs in southern New England and southward.

HABITS.

This is also one of our rarest Skippers and occurs in July, in Massachusetts, like many species frequenting flowers by the roadsides.

105. PAMPHILA ACOIUS.

White-spotted Brown Skipper.

DESCRIPTION.

Sr. Ch. Size, medium. Primaries, long but rounded. Secondaries, large and square.

Color. Above. Dark brown, fringed with lighter, and with a bronzy luster. There are three, white spots on the outer, upper border of the primaries and two others below them, one, the outer and upper, small, and the inner and lower, larger. Secondaries, rounded above.

Beneath. Paler, especially outwardly, with the spottings distinct. The secondaries are crossed by two light brownish bands. Body, palpi, antennae, eyes, and feet, brown.

DIMENSIONS.

Spread of wings, from 1.25 to 1.35. Size of primaries, from .37 by .63 to .40 by .65. Size of secondaries, from .43 by .45 to .45 by .47. Length of antennae, from .25 to .30. Length of body, from .50 to .60.

OBSERVATIONS.

Known by the brown color, with the five, white spots on the primaries and similar markings on the secondaries below. Occurs from southern New England, southward.

HABITS.

This is a southern species, occurring from Florida northward, but is very rare in New England. In the south it is found from early spring until late in the autumn.

106. PAMPHILA HIANNA.

Four-spotted Brown Skipper.

DESCRIPTION.

Sr. Ch. Size, medium. Primaries, very pointed. Secondaries, short and rounded.

Color. Male. Above. Very dark brown, fringed with lighter. There are three, minute dots on the outer, upper border of the primaries, and one below these a little inside them, also minute. The black dash is very narrow and crosses the middle vein and reaches to the lower vein. Secondaries, unmarked.

Beneath. Paler, overwashed with whitish outwardly, with the spottings slightly enlarged. Body, antennae, and palpi, brown above, whitish below. Feet and eyes, brown.

Female. Similar, without the black dash and with three, extra spots below the others and under them.

DIMENSIONS.

Spread of wings, from 1.25 to 1.35. Size of primaries, from .25 by .55 to .37 by .57. Size of secondaries, from .25 by .45 to .37 by .47. Length of antennae, from .25 to .27. Length of body, from .50 to .60.

OBSERVATIONS.

Known by the dark color, pointed primaries, four, minute, white spots and narrow dash, in the male, and in the female by the six white spots and unbanded secondaries below. Occurs in Massachusetts.

HABITS.

This species was described by Mr. Scudder from specimens taken in Massachusetts where it is very rare, however, occurring in the eastern section in July.

PLATE IX.



EXPLANATION OF FIGURES ON PLATE 9.

1. *Papilio ajax*, Green Swallow-tail, lower side.
2. *Eresia frisia*, Florida Spotted Butterfly, upper side.
3. *Papilio palamedes*, Broad-winged Swallow-tail.
4. *Terias jucunda*, Banded Yellow Terias, lower side ; 6, upper side of same.
5. *Colaenis julia*, Julia's Butterfly, lower side.
7. *Eunica monima*, Violet Butterfly, lower side.
10. *Carterocephalus mandan*, Small Black Skipper, upper side.
11. *Agraulis vanillae*, Red Silver-wing, upper side ; 13, lower side of same ; 8, 9, 12, chrysalis of same species.

APPENDIX.

The following are comparative descriptions of the remaining species of Butterflies which occur in Eastern North America, between the Mississippi River and the Atlantic Ocean, not given in the body of the Work. The arrangement here given is not that of the body of the work, but that used in my Manual of the Butterflies of North America.

PAPILIO AJAX Linn. GREEN-BANDED SWALLOW-TAIL. (Plate IX, Fig. 1.)

Size, medium; tails, long, without terminal enlargement. Brownish-black, banded with greenish, as in figure. Near inner angle of hind wing are two scarlet spots. Expands, 2.00 to 3.50. Habitat, Eastern United States from Pennsylvania, southward.

There are some dimorphic forms. WALSHII is the winter form, of medium size, with the red spots on inner angle of hind wing, fused together; tails of moderate length, white tipped only. TELEMNIDES is also a winter form, larger than the former, with the dark areas more extended, the red spots partly, or wholly separated; tails, long, with the white tippings extending up on the sides. MARCELLUS is the typical, or summer form, described and figured, and is larger than the others.

PAPILIO AJAX ABBOTTI Edw. Is similar to walshii to which it owes its parentage, but has a crimson streak on the hind wings above, outside of the lower portion of the two black bands that cross both wings.

PAPILIO BREVICAUDA Scud. SHORT-TAILED SWALLOW-TAIL.

Similar to *P. asterias*, but differs in having the inner band of yellow spots more restricted, and more or less tinged with orange, while the tails are very short. Expands, 3.00 to 3.50. Habitat, Anticosti, Newfoundland, Labrador, and Quebec. Occurs in June.

PAPILIO ASTERIAS ASTEROIDES Reak. Similar to *P. asterias*, but differs in having the inner row of yellow spots on both wings nearly obscured, excepting spot on lower margin of fore wing which is considerably elongated. The blue band of hind wings is broken up into small, round spots. Beneath, there is a row of large orange spots on fore wings.

CALVERLEYII Gro. Is either an example of reversion or of suffusion, being widely banded with yellow and orange.

PAPILIO PALAMEDES Dru. BROAD-WINGED SWALLOW-TAIL. (Plate IX, Fig. 3.)

Not dissimilar to *P. asterias* above, but with inner band of yellow spots wider, continuous on hind wings, and with less blue. Beneath, there is a yellowish, narrow band crossing base of both wings parallel with the body. Sides of body, streaked not spotted. Expands, 3.90 to 4.75. Habitat, the Gulf States, north to Virginia. Appears in March, disappears in November.

PAPILIO POLYDAMAS Linn. RED-SPOTTED BLACK BUTTERFLY.

No tails, but with the hind margin deeply indented. Dark brown; a band of dull orange spots crossing fore wings and becoming continuous on hind. Beneath, the orange spots are repeated on fore wings, but the band on hind is replaced by a row of seven red spots. Expands, 3.60. Habitat, Cuba, Mexico, and rarely Florida.

PIERIS ILAIRE Godt. FLORIDA CABBAGE BUTTERFLY.

Greenish white, with extreme upper border of fore wings dusky, and a serrated dusky border on outer margin. Hind wings, without markings, and the markings are not repeated below; but apex of fore, and entire surface of hind, wings tinged with ochreous. Expands, 2.25 to 3.00. Habitat, Central and southern Florida.

PIERIS MONUSTE Linn. **LARGER CABBAGE BUTTERFLY.**

Similar to *P. ilaire* but differs in being large, with the black on fore wings more extended, covering outer fourth of wing. Hind wings have a line of dusky triangular spots. Expands, 2.50 to 3.00. Habitat, Southern States.

PIERIS VIRGINIENSIS Edw. **EDWARD'S WHITE BUTTERFLY.**

Similar to *P. oleracea* but with longer and narrower wings, with the ground colors much obscured with brownish scales above, and all the veins below are margined with brownish. Expands, 1.70 to 1.90. Habitat West Virginia.

ANTHOCHARIS OLYMPIA Edw. **OLYMPIAN MARBLED BUTTERFLY.**

Known from *A. genutia* by the absence of any orange, and in the marblings on hind wings below being broken into three divisions. Expands, 1.60 to 1.70. Habitat, West Virginia, Indiana, and Nebraska. Occurs with *A. genutia* in April.

CALLIDRYAS SENNAE Linn. **YELLOW-GREEN BUTTERFLY.**

Male differs from that of *C. eubule* in being of a clearer, more greenish yellow, and in having the only two spots at end of central cell of fore wing below. The female is decidedly different, being dull orange yellow above and below. Expands, 2.00 to 2.75. Habitat, Central and Southern Florida. Occurs from March to November in Florida.

CALLIDRYAS SENNAE ORBIS Poey. Differs from type, in being more or less white, but this form is confined to the female. Habitat, Cuba and Southern Florida.

CALLIDRYAS AGARITHE Bd. **LARGE ORANGE BUTTERFLY.**

Differs from *C. eubule* in having a prominent orange border to hind wing, and in the male, a patch of orange on fore wing. Expands, 2.25 to 3.00. Habitat, Florida, Texas, Illinois, and Wisconsin.

KRICOGONIA LYSIDE Godt. **YELLOW AND WHITE BUTTERFLY.**

Greenish-white with basal third of fore, and extreme base of hind, wings lemon yellow. Apex of fore wings, yellowish rufous, and there are a few brown scales on the cross vein at end of central cell. Paler beneath. Expands, 1.70 to 2.00. Habitat, Indian River, Florida, and Texas.

COLIAS CAESONIA Stoll. **YELLOW DOG'S HEAD.**

Color of *P. philodice* but differs in having the border widened and enclosing a yellow space that bears a striking resemblance to a dog's head. Expands, 2.25 to 2.50. Habitat, Southern States.

TERIAS JUCUNDA Bd.-Lec. **BANDED YELLOW TERIAS.** (Plate IX, Figs. 4 & 6.)

Differs from *T. delia* in being grayish white beneath, with the fore wings tinged with yellow. Expands, 1.25 to 1.45. Habitat, Gulf States.

TERIAS ELATHEA Cram. **SMALL BANDED TERIAS.**

Differs from *T. delia* mainly in having the hind wing white on both surfaces. Expands, 1.10 to 1.25. Habitat, Cuba and other West Indies. I have a single specimen which I took at Enterprise, Florida, in May 1889.

HELICONIA CHARITONIA Linn. **YELLOW-BANDED BUTTERFLY.** (Plate X, Fig. 9.)

Wings, greatly elongated. Velvety black with three rather longitudinal bands of lemon yellow. Paler beneath, with four crimson lake spot on lower margin of hind wings. Expands, 2.50 to 4.00. Habitat, Tropical America, some of the West Indies and Florida, north to South Carolina.

DANAIS BERENICE Cram. **MAROON BUTTERFLY.** (Plate X, Fig. 1 & 4.)

Differs from *D. archippus* in being smaller and uniform yellowish chestnut or maroon in color. Marked with black and white, as seen in the plate. The female has fewer spots on hind wings. Expands, 2.60 to 2.85. Habitat, Southern States and westward.

COLAENIS JULIA Fab. **JULIA'S BUTTERFLY.** (Plate IX, Fig. 5.)

Wings, long. Bright reddish orange above, whitish on upper fourth of hind wings, with prominent veins on fore wings: upper margin and band crossing obliquely from upper vein to outer margin of both wings, dull black. Within the bordering of hind wings are two rows of narrow reddish spots. Beneath, paler, marked as in plate. Female, much duller, with bordering wider but the oblique band above is incomplete. Expands, 3.25 to 3.50. Habitat, Southern Florida.

AGRAULIS VANILLAE Linn. **RED SILVER-WING.** (Plate IX, Figs. 11 & 15.)

Above, rich reddish orange with a sub-marginal band of spots no fore wings, within which are three spots; at end of central cell is a triangular spot, and in the middle of the cell are two spots, and all three of these cellular spots contain a white dot. Beneath, not as bright, tinted with crimson lake at base of fore wings. Hind wings and apex of fore, yellowish brown, spangled with numerous black-ringed silver spots. These and other markings are given in the plate. Chrysalis, grayish as given in plate.

ARGYNNIS DIANA Cram. **DIANA BUTTERFLY.**

Very large. Sexes, different. Male, velvety brown above with both wings orange, crossed with dark veinings and containing two not very prominent rows of spots. Pale orange beneath, with the outer third of fore wings unmarked, but with the inner portion having the usual markings seen in the genus. Hind wings, dusky on basal two-thirds, with three or four faintly indicated, silver spots; a band of elongated black spots crosses the wing, and there is a sub-marginal row of black-ringed, crescent-shaped silver spots. The female is blue black above, with three rows of bluish spots crossing outer third of fore wing and two on hind, the outer narrow, the inner broad, and inclosing a row of black spots. Beneath, brownish with fore wings crossed by two rows of bluish spots, within which are about eight bluish spots, forming a pattern about like that seen in the male. Hind wings, with two narrow, black-edged whitish lines. Expands, 3.30 to 4.00. Habitat, West Virginia to Georgia, and some of the Western States.

ARGYNNIS ALCESTRIS Edw. **FERRUGINEOUS SILVER-WING.**

Size and general coloration of *A. aphrodite*, but there is no clear ochereous, sub-marginal border on lower side of hind wing. Expands, 2.00 to 3.00. Habitat, Illinois, Michigan, and westward.

ARGYNNIS TRICLARIS Hub. **HUBNER'S ARGYNNIS.**

Similar to *A. myrina* but differs in having no silver spots on border of wings below, and in having one central and one basal row of silver spots on hind wings below, with a row of silver dots in the sub-marginal interspace. Expands, 1.50. Habitat, Arctic America, Labrador, and Canada.

ARGYNNIS CHARICLEA Schneid. **DUSKY BUTTERFLY.**

Similar to *A. myrina* but paler, are no silver spots beneath, and there is a central, zig-zag band crossing hind wings within which the wing is purplish brown, crossed by two bands of black. Expands, 1.30 to 1.50. Habitat, Labrador and northward.

ARGYNNIS CHARICLEA BOISDUVALLII Somm. is similar but the white central band on hind wings below is divided and broken into spots. Habitat, similar.

ARGYNNIS FREYA Thun. **FREYA BUTTERFLY.**

Similar to *A. c. boisduvalli* but differs in the absence of the white band below, this being represented by an arrow-shaped spot in the central cell. Expands, 1.35 to 1.60. Habitat, Labrador, northward and westward.

ARGYNNIS POLARIS Bd. **POLAR BUTTERFLY.**

Differs from *A. freya*, in having a row of minute crosses on outer margin of hind wing below. Habitat, Labrador and northward.

ARGYNNIS FRIGGA Thum. **FRIGGA BUTTERFLY.**

Size of *A. chariclea* but darker, at least, one half of the wings being obscured with dusky, and all the markings are heavy. Beneath, overwashed with purplish on outer margin of hind wing, and the white markings are confined to a row of white spots on outer margin. Habitat, Labrador, northward and westward.

EUPTOLETA HEGESIA Cram. DOTTED BUTTERFLY. (Plate X, Fig. 10.)

Differs from *E. claudia* in the entire absence of any markings inside the row of spots on hind wings above. Expands, 1.85 to 2.25. Habitat, West Indies and Bahamas, rare in Florida.

PHYCIODES CARLOTA Reak. CARLOTA CHECKER.

Similar to *P. nycteis* above, with all the markings greatly extended. Beneath, the fore wings have more black through the middle, and there are only two yellowish spots in the central cell of the hind wings. Habitat, Southern and Western States. Rare in Western Virginia.

PHYCIODES PHAON Edw. SOUTHERN CHECKER.

Similar to *P. tharos* but differs in having a whitish band crossing the fore wings, widest above but showing on both surfaces. Beneath, the hind wings are paler, with the dark markings clearer, bolder, and darker. There is a dark summer form. Expands, 1.00 to 1.30. Habitat, Gulf States.

PHYCIODES BATESII Reak. BATES' CHECKER.

Similar to *P. tharos* but differs in having the black markings above very much extended, so that the orange is reduced on fore wings, to two bands of spots, crossing outer portion of wings, three or four short bars in central cell, a streak on lower margin, and a spot near middle of outer margin. The hind wings are also crossed by two orange bars, the outer containing the row of spots, and the sub-marginal crescents are more or less distinctly visible. There are two spots in the central cell, the inner small and semi-circled by the outer. Beneath, the central bar crosses the wing, with only a short bar between it and the apex, the lower bar being absent as in *P. phaon*, and there are three black crescents on outer margin. Hind wings lack the brownish markings and the distinct, purplish, single crescent is very pale, with all the markings showing faintly. Expands, 1.65 to 2.25. Habitat, West Virginia, Maryland, and from New York to Ohio.

EREISA FRISIA Poey. FLORIDA SPOTTED BUTTERFLY. (Plate IX, Fig. 2.)

With a general resemblance to *Phyciodes tharos*; but differs above as given in the plate. Beneath, the basal half of the wings is reddish orange with four or five large, buffish spots, the outer half brown, with the border whitish, and two whitish patches. Hind wings, with a buff border on outer third, and there is a sub-terminal row of buff crescents, in a brown patch, followed by a series of arrow-shaped marks of brown, and the center of the base is lined with reddish. Expands, 1.40 to 1.50. Habitat, Cuba, and Key West, Florida.

GRAPTA SATYRUS Edw. SATYRID BUTTERFLY.

Size of *G. comma* but brighter than even *G. interrogationis*; the marginal border is narrow, often being represented by a series of scarcely confluent spots. There are six spots on the wing but the lowest is larger than in *comma*. Hind wings have the sub-marginal border so detached as scarcely to inclose any spots. Beneath, much as in *comma*, but the C is bent in the middle similar to that in *G. progne*, but is not quite as slight as in that species. Expands, 1.30 to 2.00. Habitat, Ontario, Quebec, and westward.

Marsyas is a dimorphic form in which the border is as distinct and as wide as in *comma*, but the ground color is brighter.

ANARTIA JATROPHAE Linn. SOUTHERN BUCK-EYE.

Not dissimilar to *Junonia coenia*. Gray, with two round black spots in each wing. The outer border is composed of three brownish, wavy lines, the outer on the edge of the wing. Wings crossed by several wavy lines of the same color as the border, five of these bars being in the cell of the fore wings and at its end. Beneath, paler. Expands, 2.00. Habitat, Florida and Texas.

EUNICA MONIMA Cram. VIOLET BUTTERFLY. (Plate IX, Fig. 7.)

Brown above, with a decided violet reflection, with whitish spots as seen in the plate, where the lower side is figured. Expands, 1.60. Habitat, Florida and Texas.

TIMETES PETREUS Cram. RED BUTTERFLY.

Above, bright red, with upper margin of fore wings black. Both wings are crossed by three black lines which are nearly parallel to the outer margin. On the hind wings, the outer line is doubly expanded on the upper border where the included space is white. There are three eye spots on inner angle of hind wing. Beneath, brown, with violet reflections. Expands 1.00. Habitat, Southern Florida.

VICTORINA STENELES Linn. GREEN-BANDED BUTTERFLY.

Above, dull black with grass green markings as follows; a sub-marginal row of spots on both wings and a band wider within this, this band being continuous on hind, and on lower half of fore, wings. Beneath yellowish brown, becoming whitish toward base of wings, and the markings above are repeated but greatly enlarged, covering much of the surface; hind wings, slightly tailed. Expands, 3.30. Habitat Cuba, Mexico and southward, rare in Florida.

HYPOLIMNAS MISIPPUS Linn. WHITE SPOTTED BUTTERFLY. (Plate X, Fig. 6.)

Male, dark brown above, with a large oval spot in the middle of both wings, and a smaller one in apex of fore wings. Beneath, marked as in plate. Female, above, upper portion of fore wings only, dark brown with a patch of white crossing apex, and a smaller one above it; lower portion of fore, and all of hind, wings reddish orange, with a black spot on upper margin of hind. Outer border of both wings, brown, containing a double row of white spots. Beneath, similar but with the spots seen in the central cell of the male. Expands, 2.50 to 2.90. Habitat, rarely in Florida.

LIMENITIS FLORIDENSIS Str. MAHOGANY BUTTERFLY.

Similar to *L. disippus* but differs in having the ground color deeper and of a rich mahogany brown, the lower surface being but little paler; there is often a series of white spots in front of the black line on the hind wings. This is the *L. eros* of Edwards, but the above, name of Strecker has priority. Expands, 2.60 to 3.00. Habitat, Georgia and Florida.

APATURA CELTIS Bd.-Lec. CELTIS BUTTERFLY.

Grayish brown, marked and spotted as in the plate, the upper surface of hind wing being reddish yellow, and the black spots lack white pupils and are not yellow and black ringed. Expands, 1.50 to 1.75. Habitat, Virginia to the Gulf of Mexico and the Mississippi Valley.

APATURA ALICIA Edw. ALICIA BUTTERFLY.

Similar to *A. celtis* but differs in being smaller and in having some of the black spots on hind wings above, pupiled. Beneath, there are pupiled and double-ringed, black spots on hind wings, and two on fore, the lower of which is not pupiled nor ringed.

APATURA CLYTON Bd.-Lec. CLYTON BUTTERFLY.

Similar to *A. celtis* but differs in being larger and in the absence of any eye spots on the fore wings. Expands, 1.75 to 2.50. Habitat, New York to the Gulf of Mexico.

APATURA FLORA Edw. FLORA'S BUTTERFLY.

Size of *A. clyton*, but differs in having the hind wings more pointed at the inner angle, and the general color is bright, reddish orange, and the marginal border is very wide, reaching nearly to the row of eye spots on hind wings. Habitat, Florida and Texas.

PAPHIA TROGLODYTA Fab. RED LEAF-WING. (Plate X, Fig. 9.)

Fore wings produced into a long angle; hind wings tailed. Male, coppery red above, with outer border of both wings black. There is a black bar at end of cell of fore wing, and another crossing half the hind wing from the upper border. Beneath, reddish gray, as in the plate. Female, paler, with the border wide and inclosing a yellowish band on both wings. Expands from 1.70 to 1.90. Habitat, Illinois and westward.

NEONYMPHA EURYTRIS VIOLA, (Plate X, Fig. 11) is larger in size than the typical northern *N. eurytris*, richer in color above, where there is a violet iridescence and with more prominent markings above and below. Habitat, Middle Florida.

NEONYMPHA GEMMA Hub. GEM WOOD BUTTERFLY.

Grayish brown above, with no prominent markings. Beneath grayish buff. There are three wavy, brown, transverse lines on fore wings. In the middle of hind wings is a large, oval, whitish patch and four roundish vandyke brown spots, each with an anchor-shaped spot of pale, metallic, bluish scales. The margin of the wing towards the apex has a bluish border, and there are two brown lines on the hind wings. Expands, 1.25. Habitat, West Virginia, south to the Gulf of Mexico.

NEONYMPHA AREOLATUS Sm.-Abb. **GOLDEN-RINGED BUTTERFLY.** (Plate X, Fig. 7.)

Dusty brown above, without prominent markings. Beneath, yellowish brown, both wings with a narrow border of reddish yellow, which is double on the fore wings, where are two wavy bands of the same color crossing middle of wing. On hind wings is a wavy band crossing middle of wing, outside of which is an oblong circle, both of yellowish red; within the circle are five oval, black spots, three large, and the upper and lower small, all are yellow-ringed and spotted with gold. Expands, 1.30 to 1.50. Habitat, Gulf States, rare north to New Jersey.

NEONYMPHA SOSYBIUS Fab. **SOUTHERN QUAKER.**

Grayish-brown above without conspicuous markings. Beneath, more yellowish, with both wings doubly bordered with brownish, and there are two bands of this color crossing middle of wing, with a dash at end of each cell. Between the outer and second bands on fore wings, is a yellow-ringed, black spot, bluish-pupiled, and with indications of others. On hind wings, are two yellow-ringed, black spots, with indications of others. Expands, 1.35 to 1.50. Habitat, Middle and Southern States.

SATYRUS PEGALA Fab. **SOUTHERN WOOD BUTTERFLY.**

Dusky brown above with a broad buff band on outer portion of fore wing, containing a black spot with a single white pupil, and nearer the inner angle of the hind wing is a single black spot. Beneath, brownish gray, both wings crossed by many short brown lines. The markings of fore wings are repeated. Hind wings have six spots in two sets of three each. Expands, 2.50. Habitat, Gulf States, occasional at Mt. Holly, New Jersey, and on the coast.

CALEPHELIS CAENIUS Linn. **LITTLE DOTTED BUTTERFLY.** (Plate X, Fig. 5.)

Very minute. Above, deep reddish orange, plentifully spotted with black, and there are two lines of shining black lead colored spots on outer half of wings, with a row of dots between. Beneath, more yellowish, with the markings more distinct. Expands, .80. Habitat, Southern States.

CALEPHELIS BOREALIS Gr.-Rob. **NORTHERN DOTTED BUTTERFLY.**

Larger than the last, browner above, with spottings dark brown. Lead colored lines similar. Beneath, yellowish orange, with the dottings less distinct, but the lead colored lines are prominent. Expands, 1.00 to 1.20. New York, New Jersey, West Virginia, Michigan, and Illinois.

EUMENIA ATALA Poey. **BLACK BUTTERFLY.**

Black above, washed with green on the outer three-fourths of fore wings. Hind wings, with a little green in middle, and with a broad border of bluish green crescents. Black beneath; no markings on fore wings. Hind wings with three rows of small, bluish green spots; on the lower margin is a large reddish orange patch. Expands, 1.60 to 1.80. Habitat, extreme Southern Florida.

THECLA HALESUS Cram. **LARGE STREAKED BUTTERFLY.**

Above, bright, glossy blue, black on outer fourth. Hind wings with two black tails, with a blue crescent above the larger, and a smaller one on each side. Dark brown beneath, with a red spot at base of fore wings, and two more at base of hind pair. Fore wings, with a dash of blue in central cell. Hind wings, with the blue crescents repeated, and with three others of yellowish green above them. Female, larger, with about one half the wings above dull black, and there is no blue on lower side of fore wings. Expands, 1.40 to 1.60. Habitat, Gulf States, and westward.

THECLA M-ALBUM Bd.-Lec. **WHITE M BUTTERFLY.**

Above, bluish violet with upper and outer margin of wings, black. The hind wings have two tails and a yellowish red and a white spot near inner angle. Beneath, brownish gray, with a single white line outside the middle of the fore wings, bent inward, then outward, forming a rude W above the tails. Between this and the margin is a series of narrow crescents, the whole edged outwardly with black, broken before the first tail by an orange patch which extends inward to the first line. Outer margin of wing, white, with a large, pale blue patch before the second tail. Expands, 1.30. Habitat, Gulf States, Virginia, Pennsylvania, and Ohio.

THECLA FAVONIUS Sm.-Abb. **PALE STREAKED BUTTERFLY.**

Differs from the last in being brownish black above, and in having a second yellowish orange spot at inner angle of hind wing, above which are two white crescents and the lower two-thirds of the outer margin

is a border of white divided by a black line. Beneath, generally similar to *M. album*. There is a large orange patch on outer border of hind wings, and a second on inner angle, and below each is a black spot, and a bluish mark between them. Expands, 1.00 to 1.20. Habitat, Gulf States and South Carolina.

THECLA WHITTFELDII Edw. WHITTFELD'S STREAKED BUTTERFLY.

Similar to *T. calanus* but differs in being larger and in the inner of the two lines, on the under side, being single, not double or chain-like. Expands, 1.50 to 1.70. Habitat, Indian River, Florida.

THECLA ACIS Drury. DRURY'S STREAKED BUTTERFLY.

Size, small. Above, dark brown; tails, two, with the lower longest; above this tail, is a bright red spot edged outwardly with black, and another near the inner angle. Beneath, lead color; a narrow, black and white line crosses the fore wings, parallel to the outer margin and an indented, irregular line crosses the hind wings, and there are two long, reddish spots, below which are four black ones. Expands, 1.00. Habitat, Florida.

THECLA POEAS Hub. RED-BANDED STREAKED BUTTERFLY. (Plate X, Fig. 4.)

Blackish-brown above sometimes washed with blue on inner portion of both wings. Beneath, reddish brown, marked as in the plate, with red, white, and blue. Expands, .90 to 1.10. Habitat, West Virginia, and southward to the Gulf States.

THECLA COLUMELLA Fab. BROWN STREAKED BUTTERFLY.

Tail, one. Grayish brown above. Beneath, gray, with a lilac iridescence. There is a dark bar across end of central cell of fore wing, and beyond it is a row of black spots, white bordered outwardly, and outside of this, are two rows, parallel with the outer margin, of faint white crescents. Hind wings have a bar across end of central cell, a dot in the cell, and one above the edge, and a row of black and white spots, continuous with those on fore wings. Outside the line of spots, are two rows of white crescents, a little more distinct than on fore wings; there is an orange spot on outer margin, and a black spot below it, and also a black spot in inner angle. Expands, 1.00. Habitat, Key West, Florida.

LYCAENA LYGDAMAS Doubl. SILVERY-BLUE BUTTERFLY.

Silvery blue above; males, with the edge of wings, only, black; the females with a rather broad, black border. Beneath, uniform grayish brown. Fore wings, with a small, round, black spot in the central cell and a bent bar at its end, edged with white, and the wing is crossed by a curved row of large, round, black spots, the lower one connected, and all white-ringed. The hind wings have a small black spot in the cell, another on the upper margin, a narrow stripe at end of the cell, and a row of white-edged spots, similar to those on fore wings. Expands, 1.00. Habitat, West Virginia to Georgia and westward.

LYCAENA SCUDDERII Edw. SCUDDER'S BLUE BUTTERFLY.

Dark violet blue above, with outer and upper margin of wing edged with black. Beneath, dark gray. Fore wings have an oval spot and a series of black spots, all white-edged, and on the outer margin, a double series of faint spots. Hind wings, with four black spots near base, a bar at end of cell, and a series of eight spots, all spots being white-edged. There is a marginal series of six or seven metallic spots, each surmounted with a spot of orange, bordered inwardly with a dark crescent. Expands, 1.00. Habitat, New York and westward.

LYCAENA FILENUS Poey. POEY'S BLUE BUTTERFLY.

Above blue with a round black spot on outer margin of hind wing. Beneath, ashy gray with three rows of white-ringed, dusky spots crossing both wings. There is a white-encircled crescent at the end of each central cell, and three white-ringed, black spots near base of hind wings. Near inner angle of this wing is a yellow-ringed, black spot, edged outwardly with glittering, greenish atoms. Expands, .75 to .95. Habitat, Gulf States.

LYCEANA ISOPHTHALMA Herr.-Schaeff. LITTLE BROWN BUTTERFLY.

Brown above with five minute, black spots on outer margin of hind wings. Beneath, similar but paler with both wings crossed by about seven rows of elongated white spots and a row of rings at base. There is a row of seven sub-marginal, black spots on hind wings, edged outwardly with metallic green. Expands, .65 to .75. Habitat, Florida.

LYCAENA EXILIS Bd. BLUE-BROWN BUTTERFLY.

Brown above, with base of both wings tinged with blue. Hind wings, bordered with a series of round orange spots. Beneath, dark gray, orange at end of central cell, crossed by interrupted white streaks. On the outer margin is a series of dusky crescents. Hind wings, gray at base, becoming paler outwardly, then brown, followed by a broad, white, sub-marginal space. At base are orange dots. Outer margin bordered with a row of black spots, more or less covered with green scales. Expands, .60 to .70. Habitat, Florida, Texas, and other south-western states.

LYCAENA AMMON Luc. VIOLET BUTTERFLY.

Violet-blue above, with the wings margined with black, and with a small, black spot near inner angle of hind wings. Beneath, dark gray with a gray bar at end of central cell, with a white line on either side. Outside this is a row of gray spots, white lined at either side. Along outer fourth of wing is a broad white band and a sub-marginal row of white crescents. Hind wings, with similar markings, but with the white band broader, and in addition there are three white-ringed black spots near base, and near the inner angle are two black spots, more or less completely ringed with metallic blue, and the outer has an orange crescent before it. Expands, 1.00. Habitat, Indian River and Southern Florida.

LYCAENA THEONUS Luc. VIOLET-BLUE BUTTERFLY.

Pale violet blue above, with the markings below seen through. Gray beneath, with both wings crossed with a sub-marginal row of whitish crescents, followed by a row of round dots, then by three double lines of white. Hind wings with two round spots of black near inner angle, surrounded with metallic green, and ringed with yellow. Expands, .90 to .95. Habitat, Bahamas and Florida Keys.

CARTEROCEPHALUS OMAHA Edw. OMAHA SKIPPER.

Brown above, with the following bright orange markings: a sub-marginal row of confluent spots crossing the fore wing, broken opposite the central cell, two small spots being outside the line with a space between them and the spot above, and basal half of upper margin, including central cell, excepting a streak in it. Hind wing has a band crossing it, and two spots at end of central cell and on the upper border. Expands, 1.00. Habitat, West Virginia, Colorado, and California.

THYMELICUS POWESCHIEK Park. PARKER'S SKIPPER.

Dark brown above, with the upper margin, on fore wings, to near apex, dull yellow. Beneath, on fore wings, dark brown, with the basal two-thirds of upper margin, dull yellow, with the veins white, and most of the surface sprinkled with white. Expands 1.20. Habitat, Iowa, Illinois, Montana, and Colorado.

PAMPHILA SEMINOLE Scud. SEMINOLE SKIPPER.

Male. Brown above; there are three dull yellow spots on outer half of wing, near upper border, in line, two beyond the central cell, and three larger below these, and a bar at end of cell. Dash, black, broken in the middle. Hind wings, with a row of four small yellow spots near outer margin. Beneath, a little paler, with hind wings tinged with reddish, and the spots are yellower. Female, similar, but without dash. Expands, 1.35. Habitat, North Carolina, New Jersey and Iowa.

PAMPHILA MESKEI Edw. MESKE'S SKIPPER.

Male. Dark brown above, with three small spots of reddish orange in interspaces near upper border of fore wing, two opposite central cell, and in line with these is an oblique dash crossing the center of wing. The dash is in two sections, with a rough patch behind it. Beneath, on hind wings, rusty red of one shade, without spots; apex of fore wings, bright reddish with the outer margin a little obscured and the spots indistinctly repeated. Near base and below dash, black. Expands, 1.35. Habitat, Texas, and Indian River, Florida.

PAMPHILA UNCAS Edw. UNCAS SKIPPER.

Above, yellowish orange. There is a row of five yellow spots on outer portion of wing, two being much out of line. There is a patch below the cell, and dash, rather yellow. Hind wings, with all but upper border and outer border heavily washed with yellow. Beneath, yellowish gray, sprinkled with pale yellow scales. The spots of fore wings are repeated but white in color. Hind wings, with two bent white bands. Expands,

PLATE X.



EXPLANATION OF FIGURES ON PLATE 10.

1. *Danaïs berenice*, The Maroon, lower side; 4, upper side of same.
2. *Pyrgus tessellata*, White-spotted Skipper, lower side.
3. *Thecla poeas*, Red-banded Streaked Butterfly, lower side.
5. *Calephelis caenius*, Little Dotted Butterfly, lower side.
6. *Hypolimnas misippus*, White-spotted Butterfly, lower side.
7. *Neonympha areolatus*, Golden-ring, lower side.
8. *Heliconia charionia*, Yellow-banded Butterfly, lower side.
9. *Paphia troglodyta*, Red Leaf-wing, lower side.
10. *Euptoieta hegesia*, Dotted Butterfly, lower side.
11. *Neonympha corytris viola*, lower side.

1.35 to 1.60. Habitat, Delaware to Ohio, and from Dakota to Arizona.

PAMPHILA PHYLAEUS Drury. SPOTTED YELLOW SKIPPER.

Yellowish orange above, both wings bordered with wedge-shaped brown spots, and there is a bar at end of cell having two rays. Dash, narrow. Beneath, paler, spotted with brown. Female, with the basal third of fore wings, yellow with brighter yellow spots as follows: one at end of cell, and an oblique broken row behind. Hind wings, with a sub-marginal row of yellow spots. Beneath, dark yellow, with the spots repeated. Expands, 1.10 to 1.30. Habitat, Middle and Gulf States, westward to the Pacific.

PAMPHILA MYAS French. FRENCH'S SKIPPER.

Similar to *P. cernes*, but differs in the yellow of fore wings being a little brighter, and in not extending to base of wing; sometimes there are five isolated spots on outer portion of wing, three near upper border, and two outside the dash. Female, similar but without the dash. Expands, 1.00 to 1.10. Habitat, Florida.

PAMPHILA VESTRIS Bd. BROWN SKIPPER.

Similar to *P. metacomet* but differs in being tinged with yellow on the basal half of the upper border of fore wing. Female differs from female of *metacomet* in the absence of any spots in the apex of fore wing. Expands, 1.30. Habitat, Indian River, Florida, Colorado and California.

PAMPHILA LOAMMI Whitn. WHITNEY'S SKIPPER.

Dark glossy brown above. Fore wings, with three whitish spots near upper margin, on outer portion of fore wing, and there are two larger spots below these. Dash, narrow. Hind wings, without spots. Beneath, dark chestnut brown. Apex of fore wings and border of hind wings, overwashed with pearly. The spots are repeated, with five additional dots near apex of fore wings. Hind wings, with three white spots in basal third, and a row on outer portion, all the spots being black-bordered. Female, paler than the male. Fore wings, with two spots at end of central cell, and an irregular band outside these. Hind wings, similar to those of male, but with basal row not constant, sometimes being absent. Expands, 1.30 to 1.50. Habitat, Florida and North Carolina.

PAMPHILA MACULATA Edw. SPOTTED BROWN SKIPPER.

Dark brown above, with three yellowish spots near upper margin of outer portion of fore wing, and three larger beneath. Hind wings, with a small spot in the middle. Beneath, similar but washed with whitish near inner angle of hind wings, and there are three spots in middle of hind wings. Expands, 1.40 to 1.50. Habitat, Gulf States. Rare in New York.

PAMPHILA PANOQUIN Scud. PANOQUIN SKIPPER.

Brown above, with three small spots near upper border of outer portion of fore wing, one or two below these, and three larger below these; all pale yellowish. The dash is small and oval. Beneath, bronzy with spots repeated but paler; on outer portion of hind wing is a white stripe outside the central cell, with a spot below and occasionally one above. Female, similar but lacks the dash. Expands, 1.20 to 1.30. Found in the Gulf States and at Atlantic City, New Jersey.

PAMPHILA OCOLA Edw. OCOLA SKIPPER.

Dark brown with a bronzy luster with one or two small, yellowish spots near upper margin of outer portion of fore wing, and three others below these. No spots on hind wings. Beneath, similar. Female, similar, but some of the spots are larger. Expands, 1.40. Occurs, in the Gulf States and Eastern Pennsylvania.

PAMPHILA ETHLIUS Cram. GIANT SKIPPER.

Dark brown above, the fore wings with seven translucent spots and three on hind wings. Beneath, yellowish brown on hind wings and on outer portion of fore wings, with spots repeated. Female, similar. Expands, 2.00 to 2.15. Occurs in the Gulf States, rarely in New York.

PAMPHILA ARPE Bd.-Lec. ARPE SKIPPER.

Brown above, tinged with olivaceous: base of fore wing and along upper border, tinged with yellowish. Central cell, a patch before dash, and a band outside of it, clear, golden yellow. There are also more yel-

low dashes near upper border. Dash, long and slender, somewhat constricted in the middle. Hind wings, sprinkled with yellow in the middle. Female, similar but with only the dashes in upper border of fore wing and three spots below them. Beneath, in both sexes, dark golden yellow, with three pale spots across outer portion of fore wing, and the base dusky. Hind wings, without spots. Expands, 1.60 to 1.80. Habitat, Gulf States.

PAMPHILA PALATKA Edw. **PALATKA SKIPPER.**

Dark brown above, with the outer third of central cell of fore wing, and about the middle third of the wing below the cell, excepting a narrow border, clear yellow. Outside the cell are three spots of yellow near upper border. Hind wings, yellow with a broad outer and upper border. Dash, narrow, broken in the middle and dull black. Beneath, more brownish with markings of fore wings repeated, but the hind wings are without spots. Female, similar to male but lacks the dash. Expands, 1.45 to 1.50. Habitat, Gulf States and Nebraska.

PAMPHILA VITELLUS Sm.-Abb. **YELLOW SKIPPER.**

Above, bright yellow on the fore wings and having an outer border of bronzy brown about one-fifth the length of the wing and extending in a narrow border along the lower margin. Hind wings, brown with a center of yellow. Beneath, rich, clear yellow without spots. Female, similar but with the dark borderings more extended. Expands, 1.20. Found in Georgia, Southern Texas, Iowa, and Nebraska.

PAMPHILA BYSSUS Edw. **BYSSUS SKIPPER.**

Dark brown above, with the basal half of upper border of fore wing rusty yellow, extending into the central cell below. There is an irregular yellowish bar within the end of central cell, and outside of it is another bent bar, widening below. Basal half of wing, washed with yellowish. Hind wings, with a yellowish orange patch in the middle, consisting of a broad band beyond the cell, not reaching either margin, and a small spot in the cell. Beneath, rusty red, blackish at base, the spots repeated indistinctly, but the hind wings are usually unspotted. Female, similar but with the spottings more restricted. Expands, 1.60 to 1.70. Occurs on Indian River, Florida, and Texas.

PAMPHILA OSYKA Edw. **SMALL BROWN SKIPPER.**

Brown throughout, slightly tinged with green above. Dash, long, broadest outwardly, depressed in the middle. Female, similar, but grayish beneath, with three minute, semi-transparent spots on upper margin of outer portion of hind wing. Expands, 1.10. Occurs in the Gulf States and at Whittings, Indiana.

PAMPHILA EUFALA Edw. **EUFALA SKIPPER.**

Dark olive brown above, with three small, semi-transparent spots beyond the central cell, near upper border, and two spots below these. Hind wings, without spots. Beneath, paler, with hind wings, apex, and upper border of fore wings, sprinkled with gray, and the spots are repeated. Expands, 1.10 to 1.20. Habitat, Florida and Texas.

PAMPHILA FUSCA Gr.-Rob. **FUSCUS SKIPPER.**

Above, greenish-black, without spots, with a yellowish brown reflection. Beneath, overwashed with golden brown. Female, similar. Expands, 1.05. Occurs in the Gulf States.

PAMPHILA VIATOR Edw. **VIATOR SKIPPER.**

Dark brown above with a reddish tint. There is a double yellow spot at end of central cell of fore wing, and a row of spots beyond it across wing. Hind wings, yellow with a broad, brown, outer margin, and the veins are brown. Beneath, reddish brown along the upper margin and on apex, duller elsewhere. The spots are repeated indistinctly. Female, similar but larger. Habitat, Gulf States, Massachusetts, New Jersey, Illinois, and Wisconsin. Expands, 1.50.

AMBLYSCHIRTES EOS Edw. **EOS SKIPPER.**

Similar to *A. vialis* but differs in having the fringes white and yellowish; there are no spots above, excepting at apex of fore wing, and the lower side is overwashed with whitish, excepting on basal portion of fore

ings, and the hind wing has a row of white dots. Expands, 1.00. Habitat, Georgia, Florida, and Texas.

AMBLYSCHIRTES TEXTOR Hub. TEXTILE SKIPPER.

Similar to *A. samoset* but differs in being rather more uniform greenish brown above, and in having six small, white, not yellow, angular spots on fore wing, extending from upper border of fore wing to middle. Expands, 1.15. Habitat, North Carolina to Texas.

PYRGUS TESSELATA Scud. BLACK AND WHITE SKIPPER. (Plate X, Fig. 2.)

Black above, paler beneath, marked with white as shown in plate. Expands, 1.20 to 1.25. Habitat, Pennsylvania to the Gulf of Mexico, west to the Pacific.

PYRGUS CENTAUREAE Ramb. FROSTED SKIPPER.

Black above, tinged with brown, somewhat frosted with white. Spottings much less abundant than in *P. tessellata*, especially on hind wing, where there are only two obscure rows. Expands, 1.25. Habitat, New York, west to Virginia, North Carolina, and Colorado.

NISONIADES SOMNUS Lint. SOMNOS SKIPPER.

Similar to *N. icelus* but differs in having no white spots in apex of fore wing above, and in the absence of the patch of bluish white on outer portion of wing. Expands, 1.30 to 1.45. Habitat, Indian River, Florida.

NISONIADES AUSONIUS Lint. AUSONIUS SKIPPER.

Umber brown on fore wings with the grayish colors more suffused than in other species. The band crossing middle of wing is not continuous but is broken into three spots. Expands, 1.06. Habitat, Middle States and West Virginia.

NISONIADES PETRONIUS Lint. LINTNER'S SKIPPER.

Dark brown above with the blackish markings rather less strongly contrasted with the brown than in *N. juvenalis*, and it differs further from that species, in having the white spots on fore wings smaller, the four spots near apex are not quite in line, and the second and third are oblong instead of quadrate, and there are fewer white scales above. Expands, 1.90 to 2.00. Habitat, Indian River, Florida.

NISONIADES NAEVIUS Lint. PURPLISH SKIPPER.

Nearly black above, with purplish reflections. There are either three or four white spots near apex of fore wing, very minute, and another below them. There is an irregular, umber brown, spot at end of central cell. The hind wings show two rows of pale brown spots. Beneath, paler brown with the white spots repeated. Expands, 1.45 to 1.65. Habitat, Indian River, Florida.

PHOLISORA HAYHURSTII Edw. HAYHURST'S SKIPPER.

Differs from *P. catullus* in having only two white dots near the apex of fore wings, and another below it. Expands, 1.00 to 1.15. Habitat, West Virginia, west to Kansas, and south to Florida.

EUDAMUS CELLUS Bd.-Lec. SWIFT SKIPPER.

Differs from both *E. lycidas* and *tityrus* in having the yellowish band on fore wing more continuous, and in the absence of any white on hind wings below, but there are three irregular, brown bands, and a marginal series of brown crescents, surrounded with pale blue scales. Expands, 1.90 to 2.00. Habitat, West Virginia to the Gulf of Mexico.

EUDAMUS ZESTOS Hub. ZESTOS SKIPPER.

Generally similar to *E. tityrus* but differs in the absence of the white spot on under side of hind wing. Expands, 2.20 to 2.40. Habitat, Sanford, Florida, and Marco Island.

ERYCIDES BATABANO Lef. BLUE-SPOTED SKIPPER.

Smoky brown above with violet reflections. No prominent markings on fore wings. Hind wings, with a row of brilliant blue, sub-marginal spots. Beneath, paler on fore wings but the hind wings are more brilliant, and the spottings are brighter. Female, rather paler than the male. Expands, 2.30 to 2.60. Habitat, Florida.

ERYCIDES AMYNTAS Fab. AMYNTAS SKIPPER.

Dark brown above with purplish reflections. There is a white bar extending across the cell, a little beyond the middle, and below it, is a similar but larger spot, and below these, another, and near the apex, an oblique row of three small spots. Hind wings, without spots. Beneath, the spots are repeated. Upper margin fore wings, apex, and all of hind wings, excepting two bands of spots and inner angle, rich purple; remainder of surface, brown. Expands, 2.00. Habitat, Key West, Florida.

MEGATHYMUS YUCCAE Bd.-Lec. YUCCA BUTTERFLY.

Body large and moth-like. Dark brown above. Base of wings, tinged with yellow and with the following yellow markings. An irregular sub-marginal band on fore wings, a spot at end of central cell, and three small spots near outer border of central portion of hind wings. Beneath, also brown, but brighter; outer portion of wings, pearl gray, with a patch of the same color on the middle of upper border of hind wings and a white crescent below it. Spots on fore wings repeated. Female, with spottings larger. Expands, 2.50 to 3.00. Habitat, Georgia and Florida.

MEGATHYMUS COFAQUI Strec. STRECKER'S YUCCA BUTTERFLY.

Differs from *M. yuccae*, in having more yellow at base of wing, the female having the yellow spots in and above the cell of fore wing, connected in a continuous row with those below. Male has five yellow spots on outer half of fore wing. Expands, 2.25 to 2.50. Habitat, Florida and Colorado.

INDEX OF SCIENTIFIC NAMES.

	Plate	Page		Plate	Page
Am-bly-scir'-tes		57	Nym-pha'-lis		8
87 sam'-o-set Scudd	7	58	Ne-o-nym'-pha		5
86 vi-a'-lis Edw.	6	57	6 can'-thus Linn.	1	5
An-cy-lox'-y-pha		56	7 eu'-ry-tris Fabr.	2	6
81 nu'-mi-tor Fabr.	5	54	Py-ra-me'-is		18
An-tho'-en-ris		48	20 at-a-lan'-ta Linn.	3	18
63 ge-nu'-ti-a Fabr.	8	48	22 car'-du-i Linn.	3	19
Ar-gyn'-nis		22	21 hun'-te-ra Fabr.	3	19
27 aph-ro-di'-te Fabr.	3	24	Pam'-phi-la		58
28 at-lan'-tis Edw.	4	24	105 ac'-ci-us Smith and Abb.	8	65
31 bel-lo'-na Fabr.	4	26	97 bret'-tus Boisd and Lec.	8	62
26 cyb'-e-le Fabr.	3	23	100 bi-mac'-u-la Grote and Rob.	8	63
25 i-da'-li-a Drury	3-4	22	102 cer'-nes Boisd and Lec.	6	64
30 mon-ti'-nus Scudd	4	26	90 del'-a-ware Edw.	7	59
29 my-ri'-na Cram.	4	25	106 hi-an'-na Scudd.	8	65
Ca-lid'-ry-as		43	94 hu'-ron Edw.	8	60
55 eu-bu'-le Linn.	4	43	95 lo-o-nard'-us Harr.	8	61
Car-ter-o-ceph'-n-lus		57	101 man-a-ta'-a-qu Scudd.	8	63
85 man'-dan Edw.	8	57	89 mas-sa'-soit Scudd.	7	58
Chi-on-o'-las		2	103 met-a-com'-et Harr.	8	61
2 jat'-ta Hubn.	3	2	88 me'-to-a Scudd.	7	58
1 so-mi'-de-a Say.	1	1	99 mys'-tic Scudd.	8	62
Chry-sa'-phn'-nus		40	98 o'-tho Smith and Abb.	8	62
52 a-mer-i-en'-nas D' Urban	5	41	96 peck'-i-us Kirby	8	61
53 e-pix-an'-the Boisd and Lec.	5	41	91 pon'-ti-ac Edw.		59
51 tho'-e Boisd and Lec.	5	40	93 sas'-a-n-eus Scudd.	6	60
Co'-li-as		43	104 ver'-na Edw.	8	61
59 eu-ry-rho'-me Boisd	7	45	92 zub'-u-lon Boisd and Lec.	7	59
58 lau-ren-ti'-na Scudd.	8	44	Pa-pil'-io		49
56 po-lid'-ne Boisd	8	43	71 as-to'-ri-as Fabr.	6	51
57 phil'-od'-i-ce Godt.	7	44	69 chres-phon'-tes Cram.	5	50
Dan'-a-i-dae		7	67 phi-le'-nor Linn.	5	49
Dan'-a-is		7	68 troil'-us Linn.	7	49
8 ar-chip'-pus Fabr.	1	7	70 tur'-nus Linn.	6	51
De'-bis		3	Pho-lis'-o-ra		56
3 port'-lan-di-a Fabr.	1	3	83 cat'-ul-lus Westw.	7	56
Eu-da'-mus		52	Pi'-e-ri-dae		43
75 ha'-thyl-lus Smith and Abb.	7	53	Pi'-e-ris		47
74 lye'-i-das Smith and Abb.	6	53	64 o-le-ra'-co-a Boisd	6	47
72 pro'-te-us Linn.	6	52	65 pro-to-di'-ce Boisd and Lec.	5	48
76 pyl'-a-des Scudd.	7	53	63 ra'-pae Linn.	5	47
73 tit'-y-rus Fabr.	6	52	Rho-pal'-o-ce-ra		1
Eup-toi'-ta		21	Sat-y-ri'-dae		3
24 clan'-di-a Cram.	4	21	Sat'-y-rus		4
Fen-is'-e-ca		42	4 al'-o-pe Fabr.	1	4
54 tar-quin'-i-us Fabr.	5	42	5 neph'-e-lo Kirby	1	5
Grap'-ta		11	Te'-ri-as		45
13 com'-ma Harr.	2	12	de'-lia Cram.		
14 fau'-nus Edw.	2	12	li'-sa Boisd and Lec.		
15 gra'-cil-is Grote and Robinson	2	14	62 ni-cip'-pe Cram.	4	46
12 in-ter-ro-ga-ti-o'-nis Fabr.	2	11	Than'-a-as		54
17 J. al'-bum Boisd and Lec.	2	15	80 bri'-zo Boisd	7	55
16 prog'-ne Cram.	2	14	79 ic'-e-lus Lintn.	7	54
Hes-pe-ri'-dae		52	78 lu-cil'-i-us Lintn.	7	51
Ju-no'-ni-a		20	81 mar-ti-a'-lis Scudd.	8	55
23 la-vin'-i-a Cram.	3	20	77 per'-si-us Scudd.	7	54
Li-by-the-i'-dae		30	82 ju-ven-a'-lis Fabr.	7	56
Li-by'-the-a		30	Thec'-la		31
36 bach'-man-i Kirtl.	8	31	41 a-cad'-i-ca Edw.	6	31
Li-men-i'-tis		9	44 au-gus'-tus Kirby	5	36
11 ar'-the-mis Drury	1	10	40 cal'-a-nus Hubn.	4	33
9 di-sip'-pus Godt.	2	9	39 ed-ward s'-i-i Saunders	6	33
10 ur-su'-la Fabr.	1	9	42 hu'-mu-li Harr.	4	31
Ly-cas'-ni-dae		31	46 i'-rus Godt.	5	37
Ly-cas'-na		39	47 la-e'-ta Edw.	8	37
50 co-myn'-tas Godt.	5	40	45 ni'-phon Hubn.	5	36
49 pseu-dar-gi'-o-lus Boisd and Lec.	6	39	37 on-ta'-ri-o Edw.	8	31
Mel-i-tae'-a		27	43 smi-la'-cis Boisd	5	35
34 har-ris'-i-i Scudd.	4	29	38 stri-go'-sa Harr.	6	32
33 nyc'-te-is Doubl.	4	28	48 ti'-tus Fabr.	4	38
35 pha'-e-ton Drury	4	29	Va-nes'-a		16
32 tha'-ros Drury	4	27	18 an-ti'-o-pa Linn.	2	16
Nym-pha-li'-dae		8	19 mil-ber'-ti Godt.	1	17

ARRANGEMENT OF PLATES.

Plate	I	Frontis-piece
"	II	Follows page 8
"	III	" " 16
"	IV	" " 24
"	V	" " 32
"	VI	" " 40
"	VII	" " 48
"	VIII	" " 56

INDEX OF COMMON NAMES.

Butterflies.	Page	Butterfly	Page
Barren Ground	1	Pale Red	21
Beaked	30	Pale Streaked	34
Blue	39	Pearly Streaked	37
Bordered Yellow	43	Pearly Wood	3
Checkered	97	Red and Black Beaked	31
Copper	40	Red Admiral	18
Field	8	Red-bordered	29
Inscribed	11	Red Mountain	26
Large Yellow	42	Regal Silver-spotted	22
Little	31	Semicolon	11
Mottled	49	Silver Crescent	28
Nymph-like	8	Silver-bordered	25
Ocellated	20	Silver-winged	24
Orange-spotted	48	Six-spotted Quaker	6
Painted	18	Small Copper	41
Pictured	16	Tailed Blue	40
Plain	43	Ten-spotted Quaker	5
Quaker	5	Thistle	19
Red	7	White	47
Silver-spotted	23	White-banded	10
Spotted Beaked	30	White-bordered Streaked	32
Streaked	31	White J	15
Swallow-tailed	49	White Orange-spotted	48
Tailed	49	Yellow-banded Silver-wing	23
Thicket	3	Yellow-banded Swallow-tail	50
Upland	21	Yellow-bordered	16
Veined	7	Yellow-spotted Wood	4
White	47	Yellow Swallow-tail	51
Wood	1-3	Skipper,	
Yellow and Orange	45	Black-spotted	62
Butterflies Proper	1	Bordered	56
Butterfly,		Clear-winged	64
Banded Red	9	Dark-banded	55
Banded Streaked	33	Dark-brown Tailed	53
Banded White	48	Five-spotted Banded	54
Banded Yellow	46	Four-spotted	65
Barren Ground	9	Glaucous-winged	53
Black and White Banded Streaked	36	Green-margined	59
Black-bordered Orange	46	Immaculate	64
Black Swallow-tail	51	Large Bluish-winged	56
Blue banded	9	Leonard's	61
Blue-streaked	37	Orange and Brown	59
Bordered Green	43	Orange	62
Bordered Yellow and Orange	45	Pale Spotted	60
Bordered Yellow	44	Pale Spotted Brown	60
Brown Copper	41	Peck's	61
Brown-banded Comma	14	Seven-spotted Banded	58
Brown Mottled	49	Silver-spotted	52
Brown Streaked	36	Six-spotted Banded	54
Brown Wood	5	Small Black	57
Buck-eye	20	Small Bluish-banded	54
Cabbage	47	Spotted Brown	64
Cape Breton	44	Two-spotted	63
Citron	43	Two-spotted Brown	57
Comma	12	Velvet-spotted	60
Coral Streaked	38	White-banded	58
Edwards' Streaked	33	White-dotted Black	56
Gray Streaked	34	White-spotted Brown	65
Gray-winged Comma	14	White-spotted Tailed	53
Green-spotted Swallow-tail	49	Yellow Cross	58
Green Streaked	35	Yellow-fringed Brown	58
Green-banded Comma	13	Yellow-spotted Brown	63
Harris'	29	Yellow-winged	59
Hunter's	19	Yellowish-brown	62
Large Copper	40	Skippers,	
Little Black-bordered	27	Banded	54
Little Bordered Yellow	45	Black	54
Milbert's	17	Little Brown	57
Milk Weed	7	Long-tailed	52
Meadow	28	Margined	56
Mountain	1	Orange and Brown	58
Mountain Silver-spotted	24	Pigmy	57
Ontario Streaked	31	Tailed	62
Orange-banded	49	Skippers	62
Pale Blue	29		

INDEX OF COMMON NAMES IN APPENDIX.

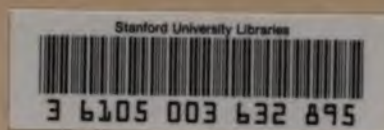
	Page.		Page.
Butterfly.		Carlota	70
Alicia	71	Southern	70
Black	72	Ferrugeneus Silver-wing	69
Blue-brown	74	Hubner's Argynnis	69
Brown Streaked	73	Red Leaf-wing	71
Celtis	71	Red Silver-wing	69
Clyton	71	Skipper.	
Diana	69	Amyntas	78
Dotted	70	Arpe	75
Drury's Streaked	73	Ausonius	77
Dusky	69	Black and White	77
Edward's White	68	Blue-spotted	77
Flora's	71	Brown	75
Florida Cabbage	67	Byssus	76
Florida Spotted	70	Eos	76
Freya	69	Eufala	76
Frigga	69	French's	75
Gem Wood	71	Frosted	77
Golden-ringed	72	Fuscus	76
Green-banded	71	Giant	75
Julia's	69	Hayhurst's	77
Little Brown	73	Lintner's	77
Little Dotted	72	Meske's	74
Large Cabbage	68	Ocola	75
Large Orange	68	Omaha	74
Large Streaked	72	Parker's	74
Mahogany	71	Palatka	76
Maroon	68	Panoquin	75
Northern Dotted	72	Purplish	77
Olympian Marbled	68	Seminole	74
Pale Streaked	72	Somnos	77
Poeys Blue	73	Small Brown	76
Polar	69	Spotted Brown	75
Red	70	Spotted Yellow	75
Red-banded Streaked	73	Streaker's Yucca	78
Red-spotted Black	67	Swift	77
Satyrid	70	Textile	77
Scudder's Blue	73	Uncas	74
Silvery-blue	73	Viator	76
Southern Buck-eye	70	Whitney's	75
Southern Wood	72	Yellow	76
White M	72	Yucca	78
White Spotted	71	Zestos	77
Whitfeld's Streaked	73	Southern Quaker	72
Violet	70	Terias	
Violet Blue	74	Banded Yellow	68
Yellow and White	68	Small Banded	68
Yellow-banded	68	Swallow-tail	
Yellow-green	68	Broad-winged	67
Checker,		Green-banded	67
Bates'	70	Short-tailed	67
		Yellow Dog's Head	68

INDEX OF SCIENTIFIC NAMES IN APPENDIX.

<i>Agraulis vanillae</i>	69	<i>Neonympha areolatus</i>	72
<i>Amblyscirtes eos</i>	76	<i>eurytris viola</i>	71
<i>textor</i>	77	<i>gemma</i>	71
<i>Anartia jatrophae</i>	70	<i>sosybius</i>	72
<i>Anthocharis olympia</i>	68	<i>Pamphila arpe</i>	75
<i>Apatura alicia</i>	71	<i>byssus</i>	76
<i>celtis</i>	71	<i>ethlius</i>	75
<i>clyton</i>	71	<i>eufala</i>	76
<i>flora</i>	71	<i>fusca</i>	76
<i>Argynnis alcestris</i>	69	<i>loammi</i>	75
<i>chariclea</i>	69	<i>maculata</i>	75
<i>chariclea boisduvallii</i>	69	<i>meskei</i>	74
<i>diana</i>	69	<i>myas</i>	75
<i>freya</i>	69	<i>ocola</i>	75
<i>frigga</i>	99	<i>osyka</i>	76
<i>polaris</i>	69	<i>palatka</i>	74
<i>tricularis</i>	69	<i>panoquin</i>	75
<i>Calephelis borealis</i>	72	<i>phylaeus</i>	75
<i>caenius</i>	72	<i>seminole</i>	74
<i>Callidryas agarithe</i>	68	<i>uncas</i>	74
<i>sennae</i>	68	<i>vestris</i>	75
<i>sennae orbis</i>	68	<i>viator</i>	76
<i>Carterocephalus omaha</i>	74	<i>vitellius</i>	76
<i>Colaenis julia</i>	69	<i>Paphia troglodyta</i>	71
<i>Colias caesonia</i>	68	<i>Papilio asterias asteroides</i>	67
<i>Danaïs berenice</i>	68	<i>ajax</i>	67
<i>Ereisa frisia</i>	80	<i>ajax abbotii</i>	67
<i>Erycides batabano</i>	77	<i>brevicauda</i>	67
<i>amyntas</i>	78	<i>calverleyii</i>	67
<i>Eudamus cellus</i>	77	<i>palamedes</i>	67
<i>zestos</i>	77	<i>polydamas</i>	67
<i>Eumenia atala</i>	72	<i>Pholisora hayhurstii</i>	77
<i>Eunica monima</i>	70	<i>Pieris ilaire</i>	67
<i>Euptoieta hegesia</i>	70	<i>monuste</i>	68
<i>Grapta satyras</i>	70	<i>virginiensis</i>	68
<i>marsyas</i>	70	<i>Phyciodes</i>	70
<i>Heliconia charitonia</i>	68	<i>batesii</i>	70
<i>Kricogonia lyside</i>	68	<i>carlota</i>	70
<i>Hypolimnas misppus</i>	71	<i>phaon</i>	70
<i>Limenitis floridensis</i>	71	<i>Pyrgus tessellata</i>	77
<i>Lycaena ammon</i>	74	<i>centaureae</i>	77
<i>exilis</i>	74	<i>Satyrus pegala</i>	72
<i>filenus</i>	73	<i>Thecla acis</i>	73
<i>isophthalma</i>	73	<i>columella</i>	73
<i>lygdamus</i>	73	<i>favonius</i>	72
<i>scudderii</i>	73	<i>halesus</i>	72
<i>theonus</i>	74	<i>M album</i>	72
<i>Megathymus yuccae</i>	78	<i>poeas</i>	73
<i>cofaqui</i>	78	<i>whittfeldii</i>	73
<i>Nisoniades ausonius</i>	77	<i>Thymelicus poweschiek</i>	74
<i>naevius</i>	77	<i>Terias elathea</i>	68
<i>petronius</i>	77	<i>jucunda</i>	68
<i>somnus</i>	77	<i>Timetes petreus</i>	70
		<i>Victorina steneles</i>	71

FALCONER
BIOLOGY LIB.

APR 21 2000



DATE DUE			
GAYLORD			

